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MONTHLY TRADE PUBLICATION

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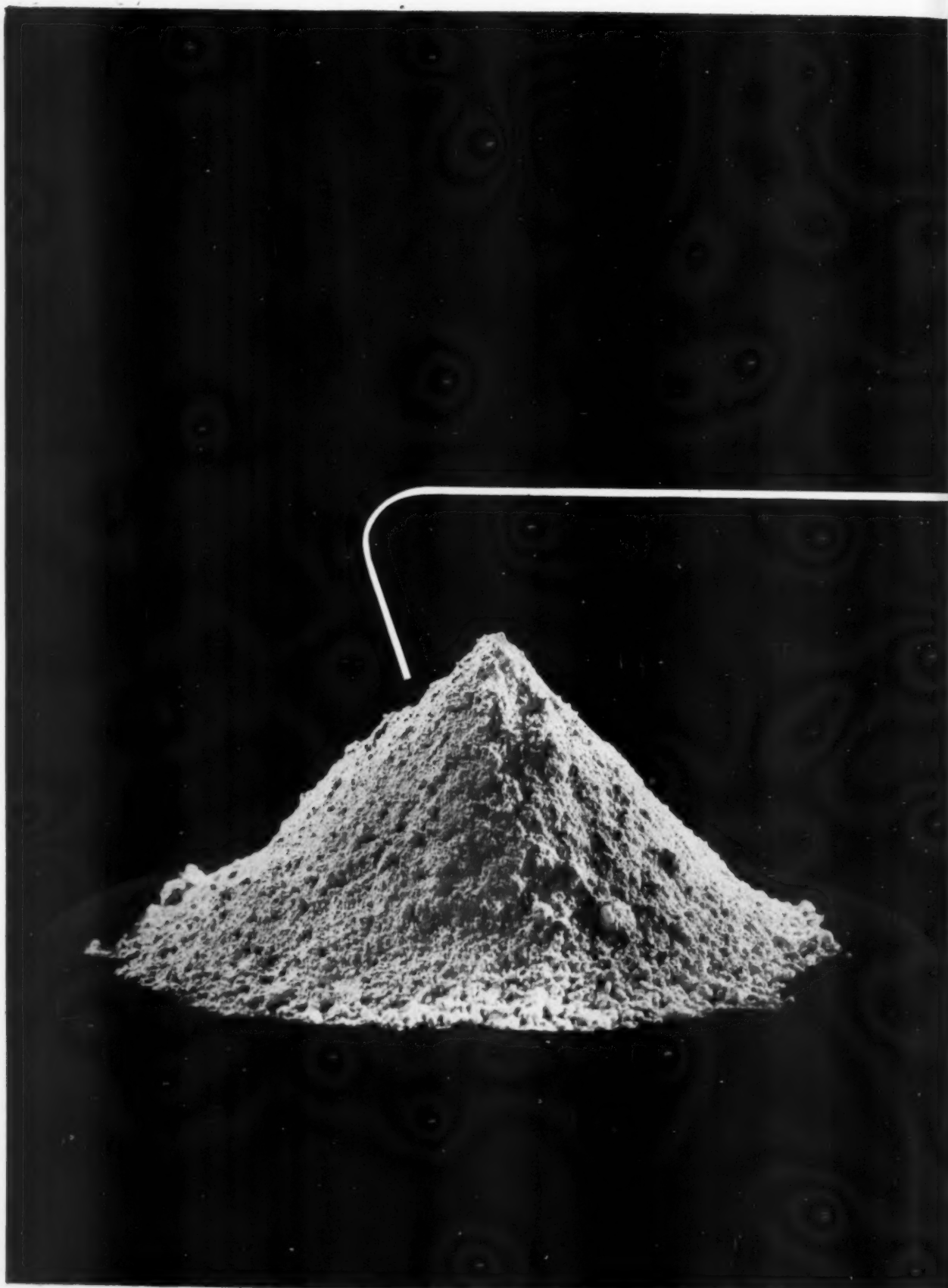
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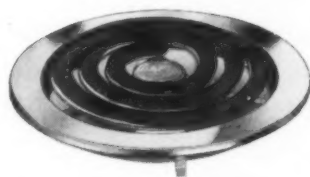
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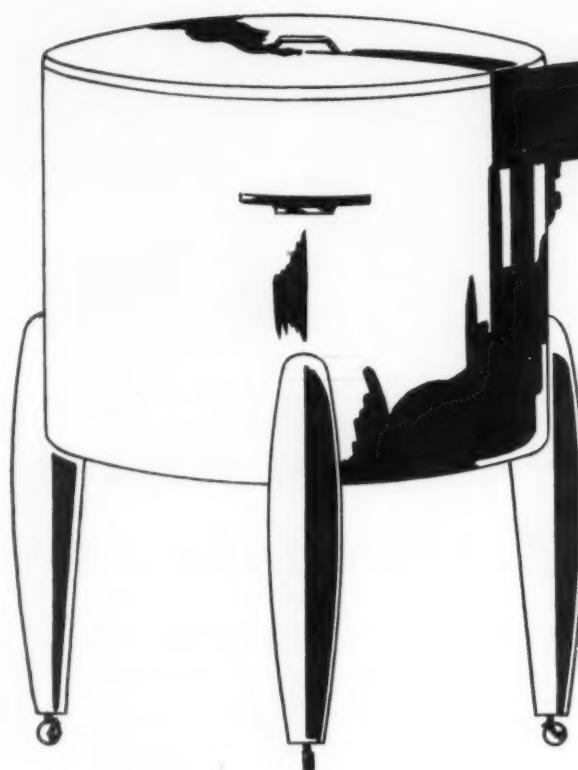
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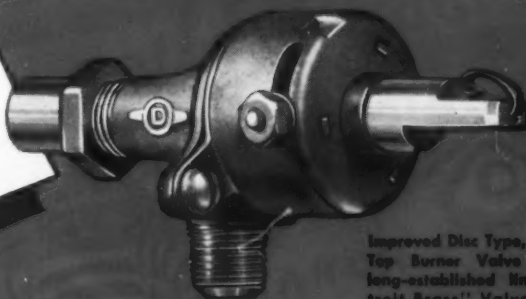
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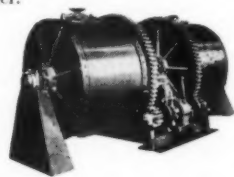


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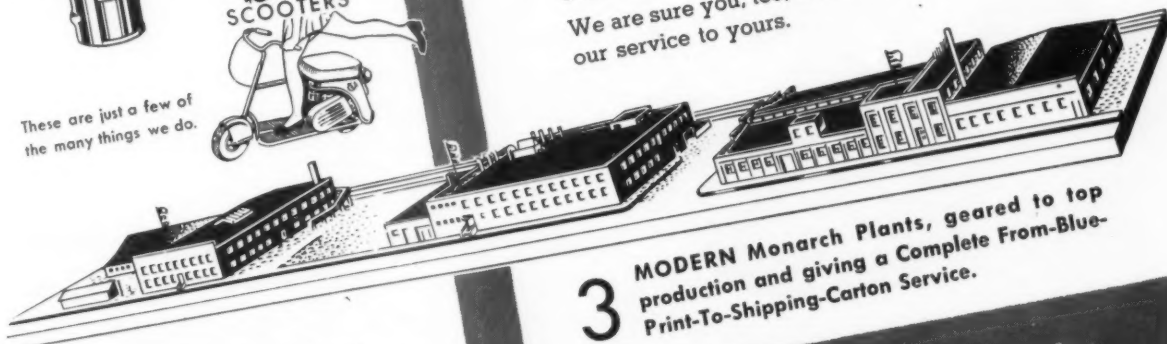
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THE Finish Line




FINISH HAD AN IDEA — which, from all indications, may soon reach a stage of development that will earn the attention and active cooperation of all of the important producing groups in the major appliance and metal products industries.

The basic idea was that the very serious problem of "loss in shipment" on porcelain enameled products, which is currently costing manufacturers and carriers millions of dollars and the loss of valuable finished products, could be tackled effectively if the right program were developed and properly coordinated.

Ideas mean nothing unless they are effectively projected into activity. It was therefore suggested that the Porcelain Enamel Institute, as the logical national spokesman for all types of porcelain enameled products, form an expertly-manned committee to take over the job of coordinating information and developing a program that would utilize the best talent and information from all major producing groups as well as the carriers and the packaging industry.

An alert organization

The idea was immediately accepted by the executive group of the Porcelain Enamel Institute. Therefore, any credit due for the development of a constructive program, and beneficial results that are expected to follow, will go to the Institute for its speedy formation of a "Packaging and Shipping Committee" and to the experienced and capable men selected to head the new project.

Ralph Bisbee, appointed by Institute President Clawson as chairman of the project, has a broad background in the problem to be tackled, and has, we are confident, the respect of the carrier groups as well as the industry groups with which his committee will be working cooperatively.

"Ev" Shands, who heads the Technical Planning Division of the Packaging and Shipping Committee, has a happy combination of technical and engineering knowledge and practical production experience which insures careful development of a forceful plan of attack.

No time lost

The new Packaging and Shipping Committee is already well past the initial planning stage and has, as a result of recent meetings, developed a tentative plan of approach that should win the unqualified approval of both industry and the carriers.

Much work has been done on the problem of shipping losses in many fields but, in many cases, the apparent complexity of the problem has limited resulting action of national importance.

The first job of the new PEI Committee was to break down the problem into its simplest elements.

An approach to the solution.

The premise on which the committee is working may be simply stated as follows: "All manufacturing, engineering and quality efforts are in vain if the product reaches its destination in a damaged condition."

In its approach to the solution, the committee has determined to "work out a plan with industry and carriers that will result in 'prevention rather than cure.' In other words, to standardize on shipping tests that will determine if the *packaged product* will stand the average transportation shocks *before* it is shipped."

It is as simple as that!

To include all enameled products

In order to insure the broadest possible benefit from the committee's program, *all* types of porcelain enameled products will receive ultimate consideration through cooperative work with appointed representatives from the major associations involved. (See listing on page 24 of this issue.) Invitations have gone out to executives of these industry associations as well as those representing packaging products and methods and the carriers. The response has been instantaneous and most enthusiastic. In addition, literally hundreds of letters denoting interest and encouragement have been received by the committee chairman and the Institute office. By the time this page goes to press it is expected that appointments of official representatives from the various associations will be complete.

Obviously, in a movement of this type, to work with individual companies would be an utter impossibility, but the driving force that will be available by combining all of these large and powerful industry groups should not be underestimated.

Early action expected

The Technical Planning Division of the PEI Packaging and Shipping Committee has already completed its first tentative plan of procedure, and meetings soon will be held with carrier groups and with the industry committee representing all associations to develop the final plan of attack.

A problem so important can not be licked overnight. When we see the promptness and forcefulness with which the committee has jumped into action, and the logic of their tentative plan, there seems little doubt that within a few months it will be possible to show curtailment of losses through comparative reports.

Everyone wins

Here's a project which deserves the support and cooperation of every producer of a porcelain enameled product. It is a cooperative effort which will mean money in the pocket for every individual manufacturer and valuable savings for the carriers. It is in good hands, and we urge every interested manufacturer to lend encouragement to his association committee member (when names are announced), or to the PEI, in connection with this valuable work.

Dana Chase

EDITOR AND PUBLISHER

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Compressed air — a versatile medium in appliance manufacturing plants

are you making full use of compressed air for your
fabricating, enameling and assembly operations?

By John Hennessey • CHIEF ENGINEER, WESTERN STOVE CO., INC., CULVER CITY, CALIF.

finish

Compressed air is used by virtually all appliance manufacturers in several of their manufacturing operations. The fact that this versatile power is always available in such plants offers many opportunities to put compressed air to work in ingenious ways as well as for the usual applications.

An example of this is found at the Western Stove Company. The company, producer of Western-Holly gas ranges, has passed its quarter-century mark and has become one of the leading West Coast range producers.

Automatic drilling machines

As an example of a use for compressed air, the work formerly done by four men drilling burner holes in castings is now done by one operator who tends five automatic drilling machines on that operation. The manual drill feed was changed to automatic by equipping the drills with air feed. Indexing of the burner is accomplished through an air-operated cam acting on a micro switch. The pulse of the drill actuates the cam. The operator's work consists of loading and unloading the burners on the five drills.

The adaption of compressed air to this work has not only increased productivity, but also results in uniform drilling feed that gives better workmanship and longer life to the drills. Multiple drilling on other operations also employs compressed air-operated feeds for similar reasons and also because that reduces the worker fatigue

Editor's Note:

Compressed air plays an important but little heralded role in plants throughout the industry. In future months, *finish* plans to present more such material pertaining to little publicized operations which are vital in the manufacturing and assembly of porcelain enameled products.

which would come if the drills were manually fed.

Air ram used for making hinges

Another company-devised application for compressed air which has increased the productivity of the individual operator as much or more than the burner-drilling operation described is in the making of hinges.

Hinge production has been stepped up by adapting an air cylinder to forming, a 3-way air valve to actuate the cycle, and a 4-way air valve to trip the hammer.





One of the five air compressors of like capacity in the Western Stove Company plant is this two-stage unit of approximately 250 cubic feet per minute capacity.

The hinges, which were once turned out one at a time on a punch press, are now formed by placing metal pieces in a circular fixture beneath an air ram. The fixture is dialed by an electric motor. A 3-way air valve actuates the cycle and a 4-way air valve trips the air ram when the work is in proper position. As with many other forming operations in

the plant, air also cleans the finished piece and die.

Handling steel parts with vacuum cups

Added safety as well as added production is sometimes gained in many of these air applications. One interesting safety use is in handling metal sections to be trimmed in a

press. Even with gloves on, the operator may be prone to cut his hands in the feeding and unloading of these metal door sections. To overcome that, the company arranged a rubber cup attached to a metal pipe. Compressed air is released by trigger at the handle end of the device as a door section is to be picked up or put down. Much as with an air spray gun, the compressed air passing over the cup creates a vacuum strong enough to pick up the piece from the pile, or from the press after trimming. This method is positive and the vacuum is controlled at will.

The stove manufacturer's compressed air requirements are supplied by five 2-stage compressors of approximately 250 cubic feet per minute capacity each. Air is delivered over the plant's distribution system at 90 pounds per square inch pressure. All compressors are centrally located in the plant's compressor room.

The 1250 cubic feet per minute air compressor plant is, of course, supplying many more factory operations than those described. The foundry uses compressed air for operating sand rammers, vibrators and the other usual foundry equipment of this type. Sandblasting operations consume the largest quantity of compressed air of any single application. There also are many uses for pneumatic tools and air spray guns.

Metal finishing and porcelain enameling operations

Milled enamel is agitated by compressed air. Air hoists are used in connection with pickling tanks because they resist corrosion; and compressed air is used extensively on the company's continuous enameling furnace, which is one of the largest in the West.

Enamel is sprayed on flat stove part surfaces automatically by air guns mounted on automatic spraying equipment. The usual manual spray booths are used on other parts. Before and after enameling, pneumatic portable tools are used in the stove making processes.

In preparing metal surfaces for enameling, a pneumatic vertical sander is often used with sandpaper and a rubber disc to assure smooth surfaces.

A rubber cup is used to pick up a metal section for trimming in the press. The operator simply pulls trigger of air gun to create or break vacuum in the cup.



It operates at 4500 revolutions per minute. Pneumatic grinders are especially suited for this work because high production is possible with the high rotative speed obtained under load while the portable tool's light weight prevents fatigue of the operator. Accessories for this operation are selected with as much care as in the selection of the right tool itself for the job.

Useful in assembly too

Pneumatic screw drivers and nut setters are used at every station of the stove company's final assembly line. Most of these lightweight portable tools operate at 2700 revolutions per minute.

The type of pneumatic screw driver used is carefully selected for each application, the considerations including the size and type of screws or bolts and their length as well as diameter. The wide range of air motor sizes and the variety of clutches which pneumatic tool manufacturers offer make possible the selection of the most suitable tool for the job. Nut driving or screw driving is done with the same tool simply by changing the fittings on the end of the spindle.

Special care taken to maintain air pressure

Since most of the pneumatic tools used by the stove company operate most efficiently at 90 pounds per square inch pressure, special care is taken to maintain that pressure on plant lines by having ample air compressor capacity, distributing the power through pipe of ample size, checking for pressure drop caused by leaks and avoiding other causes for pressure drop. The importance of these precautions may be recognized when it is pointed out that if the pressure were to drop to say 80 pounds, the output of the tool in use would drop about 17 per cent, or if the pressure were to drop to 60 pounds, the output would drop by about 50 percent. That production handicap would be an intolerable situation in view of today's labor cost.

All enamellers well know the disadvantages of fluctuating air pres-

finish



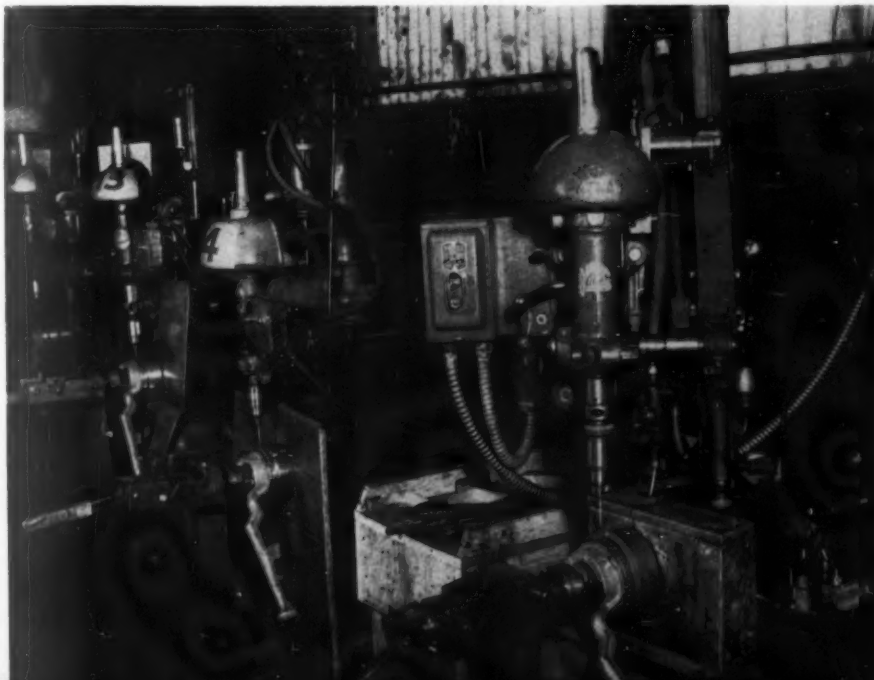
Vertical sanders, for "finishing" metal surfaces before enameling, illustrate a typical use for pneumatic tools in many appliance making operations and assembly.

sure on the operations in enamel application. The importance of a uniform air supply for enameling department cannot be overemphasized.

Compressed air is used in so many ways at the Western Stove Company plant, from cushioning the strokes of large presses to driving 2-pound screw drivers, that it has become one of the important production aids to

the manufacturer in supplying the rapidly expanding market. The adaptability of compressed air to a wide variety of uses and the convenience with which it is stored and conveyed to the point of use are among the other considerations which determine the widespread application of this versatile power to appliance manufacturing processes.

Burner holes are automatically drilled by means of compressed air feed and air-operated cam for indexing the burners. One operator tends five automatic machines.



Modernization of the pickle room

manufacturer of signs and building products finds new pickle room is efficient and economical to operate

SINCE metal preparation prior to porcelain enameling has taken on added importance in recent years, the pickling room is now being given its proper place in the production picture.

Enameling plants have been installing new pickling rooms or modernizing old ones to the point where better lighting and atmospheric conditions and improved mechanical operations and layout have increased efficiency and lowered costs throughout the industry.

The management of Wolverine Enameling Company, Detroit, Michigan, manufacturers of signs and building products, has been con-

vinced through operating experience that its new pickle room is extremely efficient and economical to operate.

Excellent natural lighting

In the plant's 30 x 84 foot pickle room, large glass block windows overlooking the pickling tanks permit a maximum of daylight to flood the area.

There are ten pickling tanks, each being 48" wide by 124" long by 60" deep. They are aligned in a sunken pit as follows: two cleaning tanks, hot rinse, two acid tanks, cold rinse, nickle dip, cold rinse, neutralizer and dryer. The dryer tank is equipped with a gas burner which automatically turns on when a bas-

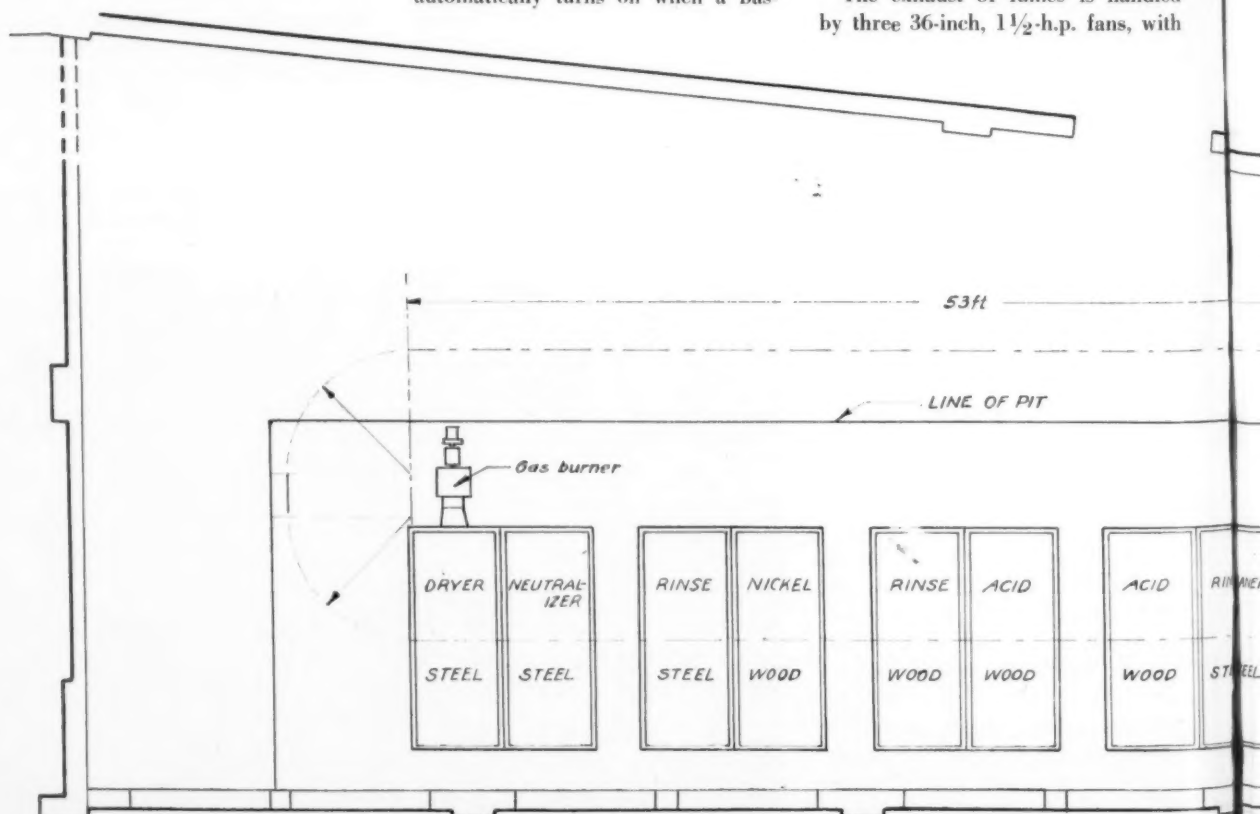
ket of ware is lowered into it, and shuts off when the basket is removed.

A conventional pickling procedure for the use of cold muriatic acid, air agitated, is employed. A nickle filter is used when filtering is required for the nickel solution.

The temperature in the tanks, which are steam heated, is automatically controlled. All solutions are tested regularly to maintain proper strength.

A two-ton electric hoist, built to withstand acid fumes, runs in either direction on an oval track. Thus no manual operation is required in the complete pickling process, aside from loading and unloading the baskets.

The exhaust of fumes is handled by three 36-inch, 1½-h.p. fans, with





Large glass block windows overlooking the pickling tanks permit a maximum of daylight to flood the area.

only two fans in operation at any one time. Details of the fan installation are shown on this page.

The entire floor and drain of pit is lined with acid proof brick laid in asphalt. (A completely automatic

device to neutralize waste solutions before entering the drain is now under consideration.)

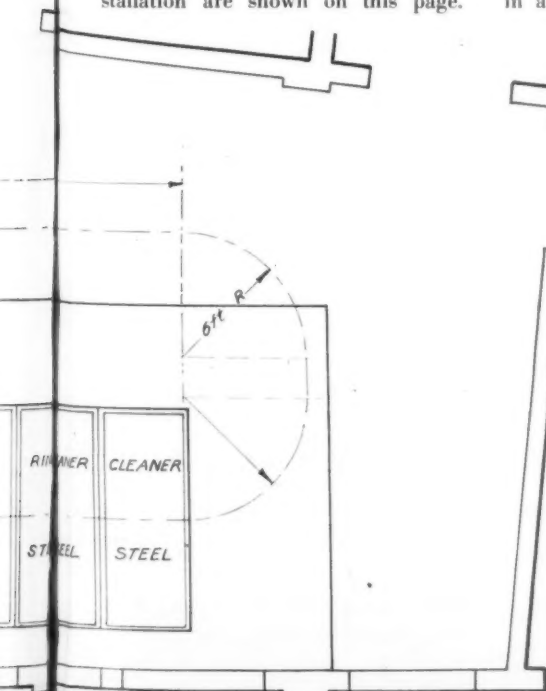
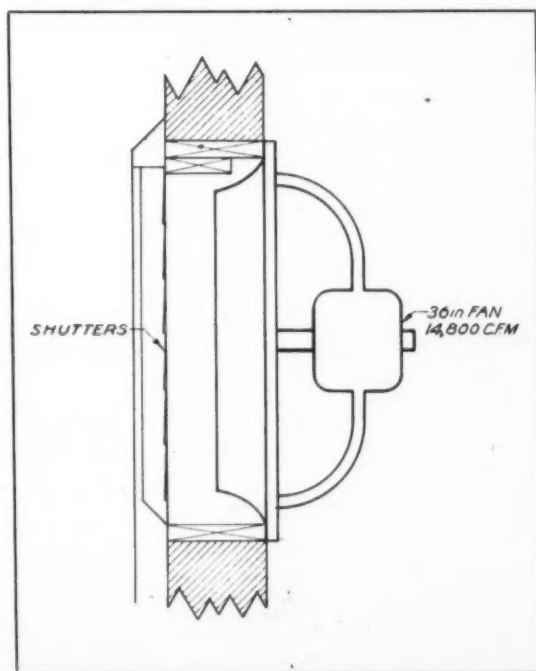


Diagram on right shows details of fan installation in pickle room of Wolverine Enameling Company.



From the Editor's mail . . .

need capital equipment

Gentlemen:

"I am now in Bangalore, South India, where there's an enamel plant. But it is for the present closed due to shortage of fuel.

"On this letter you will find the new Gandhi Memorial Stamps, released yesterday, the first anniversary of India's freedom. I feel you or some of your friends will be interested. As you know, Gandhi was the greatest man of his time, and might be of all times to come. Of course you can't feel for him as we do. We have seen him in the flesh.

"Rest assured that I shall always feel obliged to you for all good turns done to me. My government is opening a porcelain insulator plant in the near future, and if some of your friends have some capital equipment to supply us, ask them to correspond with me."

R. N. Agashe
Government Porcelain Factory
P. O. Malleswaram
Bangalore, South India

"investigating the possibilities"

Dear Sirs:

"Thanks so much for your suggestion regarding the porcelain enamel steel for our flush type clocks.

"We are investigating the possibilities of this material."

T. S. Harley
Harley's Clock Shops
Kansas City 6, Mo.

inquiry from Norway

Dear Sir:

"I recently received an inquiry from the Norwegian Industries Development Association, of Oslo, Norway, concerning the article on Spray Pickling which appeared in the April, 1947, issue of Finish.

"If you will send me a copy of this issue, I will see that it is forwarded to the Norwegian Industries Development Association for their library."

George N. Tuttle, Ceramic Engineer
Benjamin Electric Mfg. Co.
Des Plaines, Illinois

comments from readers

Rundie Mfg. Co., Camden, N. J.

(Sanitaryware)

"You have done a fine job of early reporting as in connection with the Annual Meeting of the American Ceramic Society.

"The more you can keep your longer articles on consecutive pages, the more attractive the magazine (journal) will be."

Harry A. Roth, Research

Friedman-Alschuler & Sincere Architects,
Chicago, Illinois

(Architects)

"We find Finish a very helpful magazine in keeping us posted on enameled metal. We find too, that the names of manufacturers of enameled metal are easily found in Finish when we need technical advice."

William F. Shuma, Chief Draftsman

A-B Stove Division, Detroit-Michigan Stove Co.,
Battle Creek, Michigan

(Stoves)

"I have always enjoyed the timely articles and news of the industry in 'Finish' and would very much appreciate receiving future copies."

W. F. Stearns, Charge of Production Control

Pfautler Company, Elyria, Ohio

(Glass lined tanks)

"'Finish' has been of great value to me in my work. It always has valuable things of interest. Thanks for keeping me on your mailing list."

Claude L. Wigfield, Chief Enamel Inspector

Virginia Polytechnic Institute, Blacksburg, Va.

(School)

"Appreciate receiving copies of FINISH. Have received much helpful information from this source. Look forward to continuation of receipt of this publication."

Paul S. Dear, Assoc. Professor,
Ceramic Engineering Research

Kohler Company, Kohler, Wisconsin

(Plumbing fixtures)

"You have done a splendid job in the production of 'finish.'"

R. H. Van Tassel, Ceramic Engineer
in Charge of Manufacture

General Electric Co., Erie, Pa.

(Refrigerators)

"The contents of this magazine are generally useful and interesting, and I would like to express my appreciation for this service."

Ernest J. Hakel, Section Engineer,
Works Laboratory

General Electric Co., Scranton, Pa.

(Dishwashers)

"This is an excellent publication and very helpful in our enameling problems."

F. S. Becker, Resident Engineer,
Charge of Production Design

General Electric Co., Scranton, Pa.

(Dishwashers)

"I have found Finish to be a real highlight each month. Its informative material is as good as supplementary school course (specialized)."

E. H. York, Production

General Electric Co., Scranton, Pa.

(Dishwashers)

"In view of our type of fabrication the publication is ideal. We are concerned with porcelain enamel and baked enamel finishes and equipment."

J. G. Setzer, Buyer

American Stove Co., Lorain Div., Lorain, Ohio

(Stoves)

"Your magazine has and is doing a good job within the industry in the best interests of porcelain enameling. Just keep up the aggressive work."

J. M. Bayer, Sales Manager

The Humphries Manufacturing Co.,

Mansfield, Ohio

(Sanitary ware)

"Enjoy your publication very much and find a great deal of interesting information in it."

J. C. Reimers, Plant Superintendent

Toledo Porcelain Enamel Products Co.,

Toledo, Ohio

(Jobbing)

"I enjoy reading Finish very much and find it fills a long felt need."

H. D. Brechbill, Supervisor

Mullins Manufacturing Corp., Salem, Ohio

(Sinks, cabinets, washing machine tubs)

"FINISH is doing a fine job."

Howard C. Wolf, Product Development

Heintz Manufacturing Co., Philadelphia, Pa.

(Metal stamping)

"Thank you for including us on your list for FINISH. It is most helpful."

William Meinel, President

Murray Corporation of America, Scranton, Pa.

(Stoves)

"I've enjoyed Finish thoroughly and feel that the enameling industry owes Dana Chase Publications a debt of gratitude for a job well done."

John Krivec, Process Control Engineer

Philco Corporation, Philadelphia, Pa.

(Refrigerators)

"Many thanks for past information I have enjoyed from reading your magazine."

Harry Morris, Foreman, Porcelain Dept.

Standard Porcelain Enamel Co., Philadelphia, Pa.

(Jobbing)

"A fine publication, it covers the ceramic field very thoroughly. Look forward to reading Finish each month."

Clyde N. Thomas, Vice President

Prizer-Painter Stove Works, Reading, Pa.

(Stoves and ranges)

"Enjoy your publication very much."

Leonard E. Bilger, General Manager

Gauder, Paetschke & Frey Co., Milwaukee, Wis.

(Washing machine tubs)

"I find very helpful information in FINISH. Always looking forth for the day it arrives."

Carl Forster, Foreman

Porcelain Enamel Institute

to attack packaging and shipping problems

WHAT is unquestionably one of the most progressive steps to be made by the Porcelain Enamel Institute in the interests of producers, distributors, and consumers of porcelain enameled products is represented in the recent formation of a Packaging and Shipping Committee whose

metal products was called to the attention of *finish* readers. In July *finish* the following list of six major contributing factors to losses in shipment were given (based on a survey conducted by "Electrical West"):

1. "Don't give-a-damn" attitude on the part of employees of ship-

ping is being currently launched by the Porcelain Enamel Institute was the creation, at a recent Cleveland meeting, of a new Packaging and Shipping Committee, whose responsibility it will be to coordinate all existing information and, through cooperative effort, to search further into the basic



Left: E. H. Shands, Geo. D. Roper Corp., chairman of Technical Planning Division of PEI Packaging and Shipping Committee.

finishfotos

Right: R. F. Bisbee, Westinghouse Electric Corp., general chairman of PEI Packaging and Shipping Committee.



business it will be to diligently attack this increasingly critical problem.

A long-standing problem

Losses on valuable finished products through damage in transit is not new; it has plagued manufacturers of all kinds of products, regardless of the finish. With greatly increased production, it has meant staggering claims to carriers and heavy losses to manufacturers of finished products, many of these products made of critical materials.

In *The Finish Line* (editorial) in the July and September issues of *finish*, the increasing importance of this problem to manufacturers of major appliances and other fabricated

ping and crating departments, trucking companies, railroads, and distributors and dealers.

2. Poor grade of crating and shipping materials and poorly designed cartons or crates.

3. Careless loading of freight cars or trucks, with inadequate bracing or thoughtless placing of auxiliary equipment.

4. Old and damaged freight cars and railroad handling equipment.

5. Humping of freight cars.

6. Poorly designed merchandise itself, with inadequate methods of fastening parts together so that they will withstand shipping.

PEI committee formed

The first step in a program which

contributing causes of damage and to evolve corrective methods.

General chairman of the Packaging and Shipping Committee is R. F. Bisbee, manager of quality control for Westinghouse Electric Appliance Division, at Mansfield, Ohio, who is a leading authority on the subject.

A Coordinating Committee, headed by Mr. Bisbee, includes a Technical Planning Division, headed by E. H. Shands, in charge of engineering and product development for Geo. D. Roper Corporation; an Educational Division, headed by Dana Chase, publisher of *finish*, and with co-chairmen C. B. Williams, of Ferro Enamel Corporation, and P. B. Fleming, of Westinghouse; and a Secretarial Division, headed by Edward Mackasek, man-

aging director of the Porcelain Enamel Institute.

Industry committee to include association representatives

In order to get maximum results through coordination of the constructive work of all interested groups, an "Industry Committee" is being formed to consist of a representative specialist on packaging and shipping from each of the major manufacturing group associations. The following are among the associations who have been invited to participate in this activity:

American Washer and Ironer Manufacturers Association

Gas Appliance Manufacturers Association

National Electric Manufacturers Association

Enameled Cast Iron Plumbing Fixture Association

Institute of Cooking and Heating Appliance Manufacturers

Enameled Utensil Manufacturers Council

National Electric Sign Association

Porcelain Enamel Institute

Two other groups will be invited to cooperate: the associations representing packaging products and methods, and the associations representing the carriers.

Communications already received by *finish* would indicate that the PEI will get the wholehearted backing and cooperation of the groups invited to participate.

First steps include pre-transportation test procedures

The first activity of Mr. Shands' Technical Planning Division will be to meet with representatives of carriers and accept proposals for suitable testing standards which simulate actual normal transportation conditions. This Division will then undertake the study of test equipment appearing to offer a possible answer to the setting of standard tests which would be mutually acceptable and practical for each manufacturer to carry out in his own plant.

Equipment to be considered includes an incline impact testing device, a vibration test apparatus, and a combination vertical and horizontal shock recording instrument. This combination of test equipment units is expected to simulate transportation movements such as flat wheels, road bed vibrations, bumping cars in yards, truck movements and manual handling of packages.

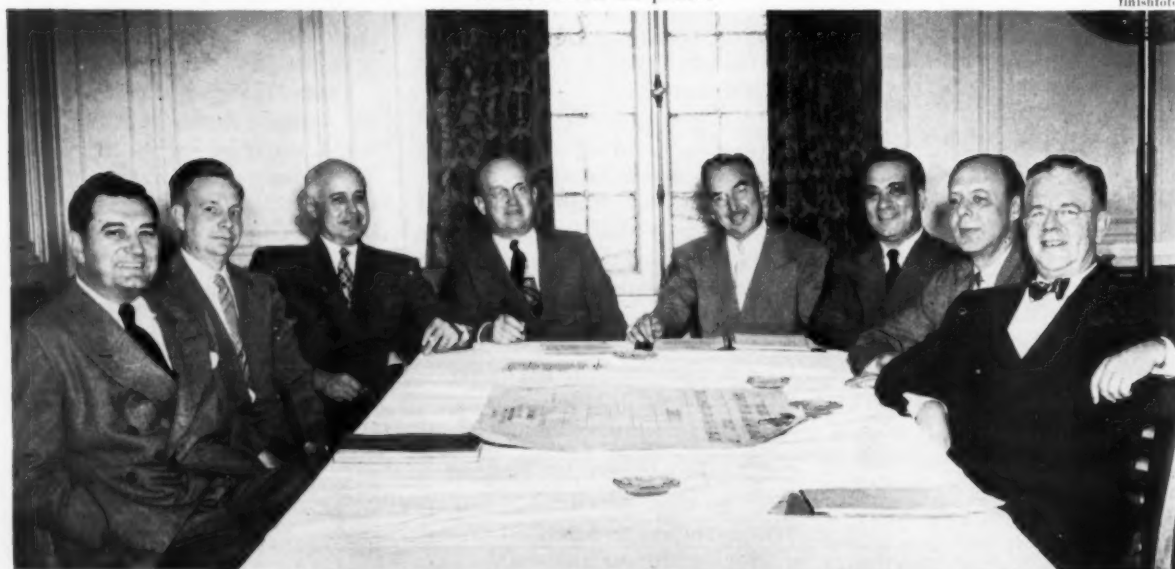
Chairman Bisbee made clear that the over-all efforts of the committee would be concentrated on the devel-

opment and standardization of test procedure and the resulting specifications, although it is plain that such specifications could cause some changes in product quality and packaging methods. "Once the specifications are fully approved," Mr. Bisbee stated, "making the product and the shipping container fulfill the requirements remains for solution by the individual manufacturer according to the degree of his problem."

Crux of the problem, Mr. Bisbee avers, is that both porcelain enameled and the carriers have suffered mounting losses, particularly in recent years, from merchandise shipping damage and claims. This has resulted in not only an expensive waste of enameling capacity and scarce steel, but also in higher than average freight rates because of damage claims. Finding a mutually acceptable packaging and product quality standard by means of a pre-shipment testing procedure should not only reduce transportation damage claims and losses but should also provide a common ground for settlement of claims without controversy.

"Reducing claims should permit lowering of freight rates," Mr. Bisbee stated, "and should remove the possibility of rate increases resulting from excessive damage claims."

Men present at organization of Packaging and Shipping Committee included, left to right: W. H. Bowden, AllianceWare; B. H. Cross, Enamel Products; E. H. Shands, Roper Corp.; Edw. Mackasek, PEI; R. F. Bisbee, Westinghouse; Frank Morelli, Ing-Rich; Geo. Hays, Vit. Steel; and C. D. Clawson, Ferro. Dana Chase, finish, is not shown on photo.



THE LUSTRON HOME

REG. U.S. PAT. OFF.



Exclusive
feature
finish

PART I

The Lustron Home — its conception and development, by Carl G. Strandlund

PART II

Handling and fabricating methods for producing the Lustron Home, by Ernest Olsen

PART III

Metal preparation and finishing in the ceramic division, by E. E. Howe

Plant layout and flow sheet

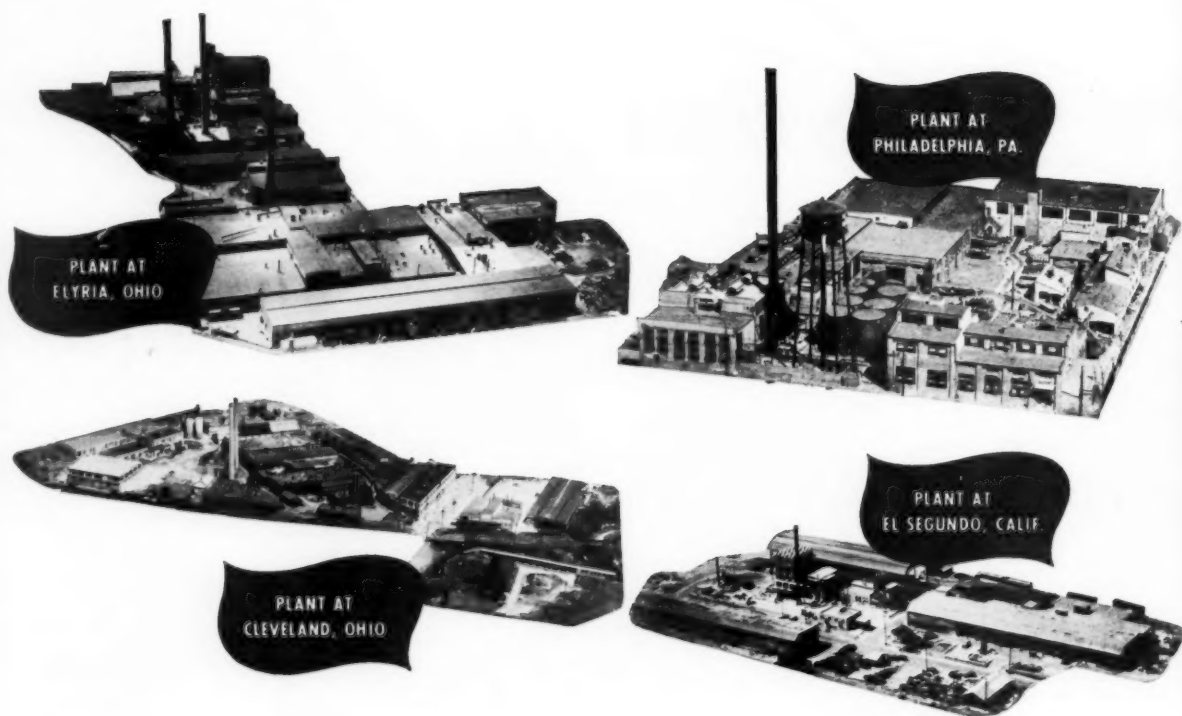
Ceramic Division layout

Production photos of key operations



View of exterior and corner of the living room of a typical Lustron Home

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BRANCHES IN PRINCIPAL CITIES

The Lustron home—

its conception and development

By *Carl G. Strandlund* • PRESIDENT

Exclusive
feature
finish

A veteran New York commentator recently made the statement that the new Lustron porcelain enamel, all-steel home is the greatest single development in housing since one stone was placed on another. Although this degree of enthusiasm may vary with each individual who sees the new Lustron Home, public acceptance of the display homes has been an outstanding success.

One million visitors to display homes

In New York, Milwaukee, Washington, D.C., Des Moines, Detroit, St. Louis, Chicago, and Indianapolis, where Lustron Homes have been opened, approximately one million persons have visited these display homes, and the crowds are still pouring through them daily.

This new industrial giant sprang—not from a log cabin in good American tradition—but from a small Chicago garage on Kimball street. There eight men dreamed, planned, designed, and experimented, and finally came up with what became the first Lustron Home, in Hinsdale, Illinois.

From its first conception, it was planned that the Lustron Home would be mass-produced on a scale never before approached in order to afford an opportunity for home ownership to the thousands upon thousands of families whose incomes would not permit consideration of an individually designed unit.

To develop this plan on the required mass production basis, it was necessary to have: (1) sound engineering, (2) adequate financing, and

(3) manufacturing facilities on a scale never before approached in the home building field.

To dovetail these plans with government thinking in connection with the housing problem, the engineering development and complete plans were presented to government housing authorities. It wasn't until the Reconstruction Finance Corporation invited the engineering firm of Stone and Webster to give an opinion of Lustron's engineered home that government and the home building industry became intensely interested.

Machinery and equipment installed in record time

Even at this early date Lustron has lived up to the expectations of Stone and Webster by erecting demonstration homes in strategic cities, and in procuring and installing over \$12,500,000 worth of machinery and equipment in about eight months. Most of this machinery was especially designed to fit the

requirements of the Lustron plant. Much of it is the largest ever built.

The impact of the Lustron home building program, now calculated to produce 45,000 a year, on the construction industry cannot be measured at this time. Lustron has long aimed at middle and lower income groups with special emphasis on veterans. Veterans of Foreign Wars has been interested in Lustron for close to two years. The American Legion is actively pushing the steel home project. The American Veterans of World War II (Amvets) is sponsoring the Chicago demonstration and proceeds from admission charges go into that organization's rehabilitation fund. The VFW had the Washington display home on the same basis. Production homes will be scattered throughout the nation as dealer-builders are screened and selected.

The question of price is often raised. The planned price for the home, exclusive of lot, is \$8,000. As

Carl Strandlund —

almost single handedly fought for the idea of the porcelain enamel steel Lustron Home through engineering, financing and building the world's largest porcelain enameling plant. A self-made engineer, he prefers to think of himself as an "imagineer." His persistent fight has now carried the company past the early stages of plant production.



I recently told a representative of the Washington Post, if considerable savings are realized through increasing production efficiency, it will be policy to throw new features into the home in addition to those already included, and keep the standard price.

Experts selected for key personnel

The tremendous plant which Lustron has built would be useless without the proper experienced personnel to direct production. Our present key organization includes experts from aircraft, automotive and ceramics. General Eugene Reyhold has come from retirement as Chief of the U. S. Army Corps of Engineers, and is now vice president in charge of operations. Men like E. E. "Gene" Howe, ceramics head; Ernest Olsen, plant manager, and Robert Runyan, chief engineer, together with many other experts in their respective fields, have been selected for their ability to offer a definite contribution to the Lustron development.

This entire group is keyed to a high pitch with determination to meet the schedules set up.

Older than history—

as new as tomorrow

As is now common knowledge in the porcelain enameling industry, fifteen centuries or more before the dawn of the Christian era, someone heated a batch of minerals and produced a glass-like substance which he found could be fused to metal with the aid of heat. In the next 2,000 years or so, men utilized this knowledge mainly to produce beautiful cloisonne vases, medallions, jewelry and other ornaments. Although porcelain enamel is older than history itself, in its most recent applications it is as new as tomorrow.

The right materials

Builders and owners have striven for years on end to supply the yearning for homes. Automotive and railroad builders solved their production and fabricating cost and other problems with highly developed, adaptable steel. All-steel car bodies and all-steel railroad coaches now are standard equipment after years of experimentation and research. Beauty, durability and low mainten-

ance are always inviting to industry—why not the home owner?

In my opinion, the combination of porcelain enamel and steel offers the practical answer for the modern low-cost home. We have developed a home equally as practical and comfortable in cold or hot climates. And it's free from the effects of ravaging winds, frosts, salt airs and other destructive elements. Rigid tests in laboratories and under actual construction conditions place our product far within the most stringent building codes and regulations.

A dynamic force

in the ceramic industry

It is our feeling that Lustron contributions to the ceramic field will advance the industry at least fifty years. Others have expressed this same view. In our newly equipped plant at Columbus, where more than 1,000,000 square feet of floor space has been converted into a beehive of activity, we will provide for the first time a beautiful, well designed, low cost and maintenance free home to help materially in meeting the present deficit in adequate housing.

President Strandlund "wraps up" one of the first complete Lustron Homes to be shipped to the building site. This especially designed trailer carries all of the necessary sections and components of a complete Lustron Home.





Lorenzo Semple, vice president

Russell Davis, executive vice president



Richard Jones, vice president-sales



Edward Mosier, acting service mgr.



*Eugene Reybold,
vice president - operations*



Antonio Montagno, plant engineer



Richard Reedy, traffic manager

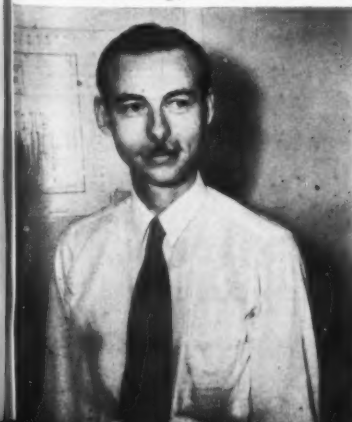
KEY MEN AT LUSTRON

In covering an operation the size of the new Lustron plant, it is impossible to give pictorial credit to all of the key men who have had a part in its design, erection and operation. These finishfotos show eleven who, with the three featured authors in this section, have played important roles in getting this gigantic plant under way.



John Magde, industrial engineer

Donald Armstrong, assistant to Howe

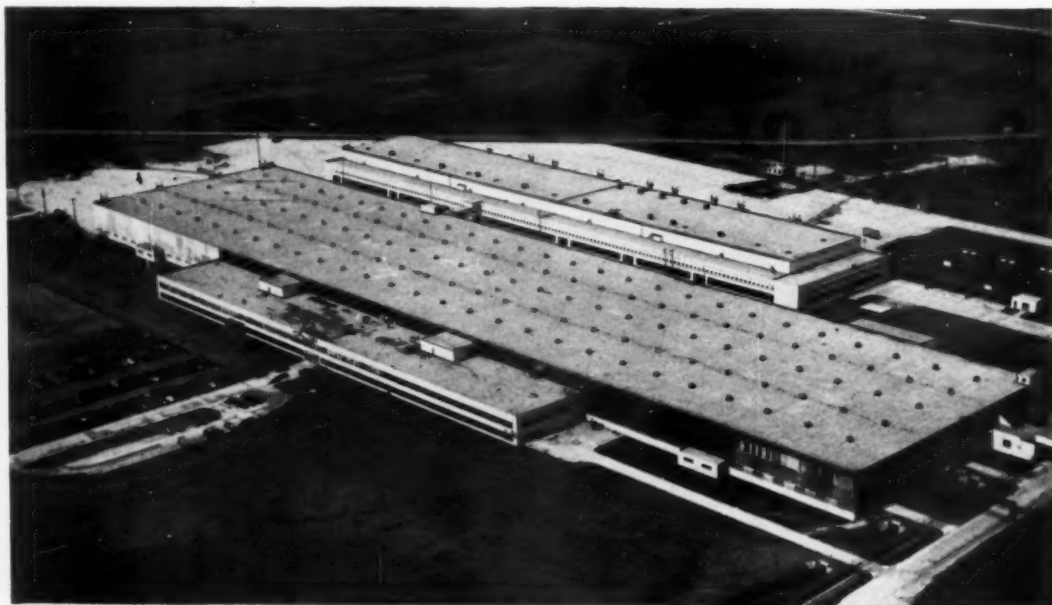


Robert Runyan, chief engineer

Kenneth True, assistant to Olsen



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predicates its entire program on the use of 1300° F.*

Porcelain Enamels — developed and introduced by Chicago Vit.

*except for sanitary ware.

L-6

OCTOBER • 1948 finish

Lustron placed its confidence in Chicago Vit for the engineering* and equipping of its 11-furnace porcelain enameling plant.

Since 1918 Chicago Vit has built and retained the confidence of executive and operating personnel of industrial firms wherever porcelain enamel is used.

Highest quality of product combined with sales integrity and outstanding service have instilled this confidence in our customers. In addition, Chicago Vit sells a complete line of enamel plant supplies and equipment.

These are the reasons why so many of the nation's leading porcelain enameling plants continue to do business with Chicago Vit — year in and year out.

**For actual engineering detail, Chicago Vitreous retained the services of A. J. Boynton & Co., one of the country's foremost firms of industrial engineers.*

Chicago Vitreous

**ENAMEL PRODUCT
COMPANY**

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L-7

Engineering Services FOR THE ENAMELING INDUSTRY



Over the years A. J. BOYNTON & COMPANY has built an enviable reputation for its engineering of industrial plants. It was a particular pleasure for the Boynton organization to be associated with CHICAGO VITREOUS ENAMEL PRODUCT COMPANY in the engineering project for LUSTRON — world's largest porcelain plant installation.

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 - ➔ PROCESS DEVELOPMENT
 - ➔ MATERIAL HANDLING
-

A. J. BOYNTON & COMPANY

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58 EAST WASHINGTON STREET • CHICAGO 2

Handling and fabricating methods for producing the Lustron home

By Ernest Olsen • PLANT MANAGER



The Lustron Home was not only designed for better living, but also for mass production. As such, it was necessary to tool and equip the plant on that basis, otherwise the house could not have been made available to the average working man at a price he could afford to pay.

In order to produce one hundred houses per day, it is necessary to receive, fabricate, transport through, and ship out of the plant better than 1200 tons of steel per day. To handle this amount of steel, railroad tracks have been installed in the center of the main fabricating building so that the steel can be unloaded from the cars or trucks with overhead handling equipment and stacked on both sides of the railroad spurs. This material is then moved directly from these stock piles into shears and automatic equipment which produce the ultimate parts for the house. Conveyors are being used wherever possible.

High production panels stamped from coil stock

When parts are used in multiples of several hundred per house, Lustron has been very careful in selecting its tooling; for example, the material for the standard 2' x 2' panel comes into the plant in large coils and is fed into a specially designed 600-ton punch press equipped with a four-stage progressive die consisting of a blanking, forming, camming, and a combination pierce and emboss operation. This progressive die fabricates a complete panel from the coil stock. From this automatic setup the pieces are hung directly onto a conveyor which delivers it to a pickling unit in the enameling department. A simi-

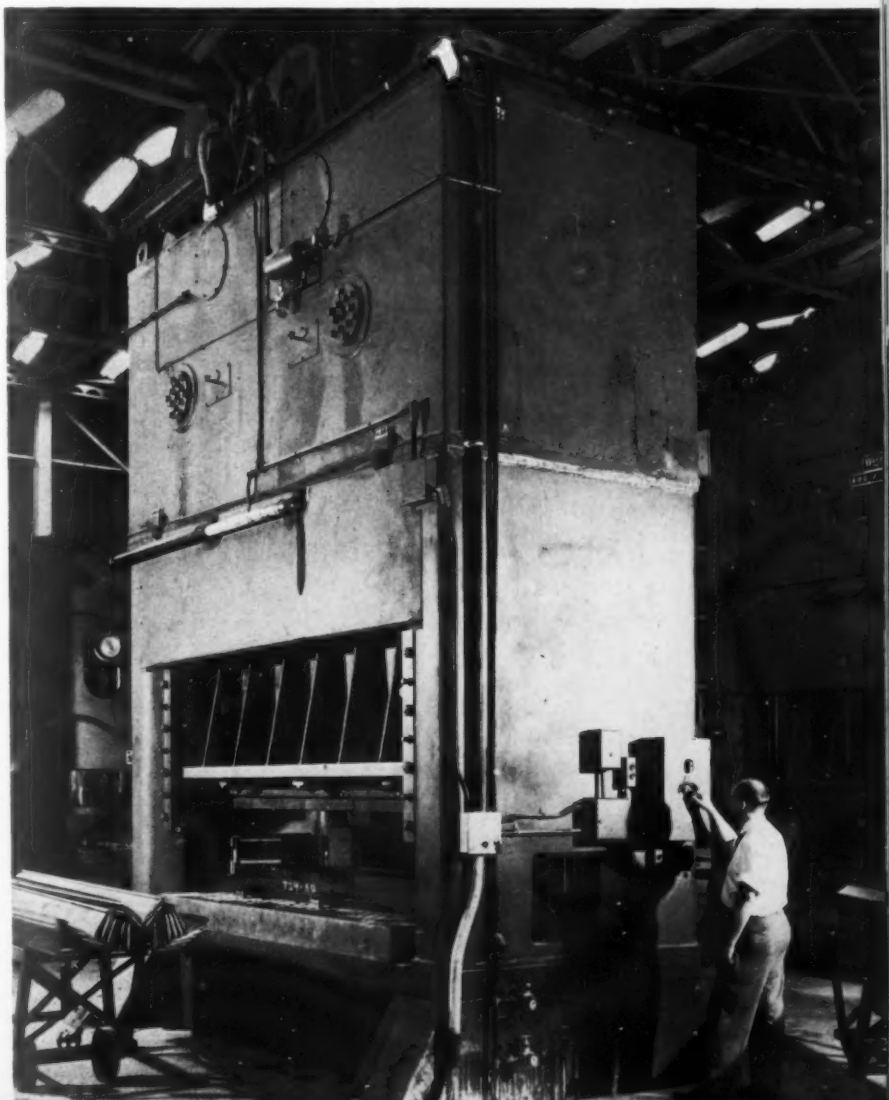
lar progressive die has been designed for our roof panel. This setup is for a specially built 1000-ton press. This is another extremely high production item, produced from 4 foot wide coils. The automatic progressive die in this case consists of: first stage, notch and lance operation; second stage, draw; third stage, restrike; fourth stage, pierce; fifth stage, trim com-

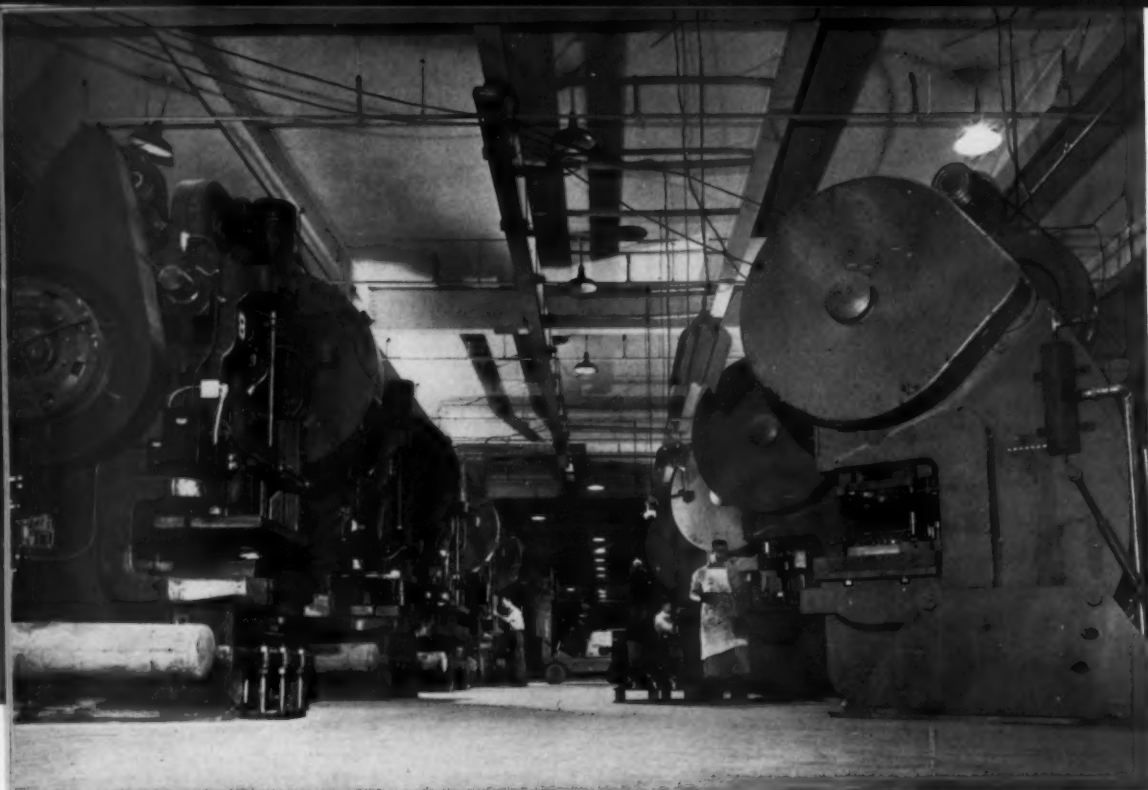
plete. The die is equipped with a mechanical ejector. The stock guides and lifter on these dies will accommodate stock approximately 56 inches wide.

Miscellaneous press department

There are numerous other parts which are not in such high quantity but are being run through what is called a miscellaneous press depart-

Two of the "medium" size presses (600 tons) in the main press department for the production of architectural parts. Such items as exterior corners and roofing panels are fabricated on this type press. Largest Lustron presses are 1800 tons.





This double row punch press represents a section of the stamping press department in the production of exterior and interior architectural parts of uniform size, and small miscellaneous parts. The stamping press department contains 40 presses varying in size from 30 tons to 150 tons.

ment. Here runs are not as large, and several different jobs are run over the same punch press. In many cases tools have been so designed that they fabricate a number of different parts. In other words, they are more or less combination dies which merely require changes in their gages in order to fabricate a series of different parts. This standardization has been done to eliminate setups as well as to reduce the ultimate tooling costs.

All the standard panels are designed and tooled in such a manner that they will have maximum strength before, during, and after enameling. This includes overforming at the corners by cam arrangement to eliminate checking of the porcelain. This corner camming arrangement is a substitute for notching and welding and is considerably less expensive to do than the latter method.

Fabricating structural sections

The structural assemblies consist of many standard common parts — principally formed sections and gussets. These parts are produced mainly on roll-forming equipment. Here, of course, coil stock is again used along with the 8 to 12 station rolls equipped with flying cutoffs. The gussets are produced from coil stock

fed into automatic progressive die setups. After the structural members and gussets are produced they are conveyed to five elaborate welding stations consisting of three circular conveyors for wall sections and two stations for truss sections. Each circular conveyor on the wall sections carries 26 welding assembly fixtures. These fixtures rotate past all the work stations. Twelve welding gun stations placed at different heights eliminate the operators having to position the welding guns from one level to an-

other. Welding fixtures and conveyors are so designed as to eliminate any operator having to struggle to position the gun, and the work that each gun or operator has to do with respect to another is so balanced that a smooth, efficient, overall operation is secured. After welding, the wall section is hung onto a conveyor which carries it directly into the bonderite and organic finishing equipment.

In order to properly protect the structural assemblies from corrosion,

Ernest Olsen—

successful young engineer, is manager of Lustron's 1,100,000 square foot plant which is designed to produce 45,000 porcelain enameled steel homes per year.

finishfoto



it was decided that some form of phosphatizing or bonderizing was necessary prior to painting. Lustron now has one of the finest and largest bonderizing, painting, and oven setups in the country. This equipment has to handle loads 17 feet in height and 8 feet in length. This gives one an idea of the height and overall size of the equipment. After bonderizing, the parts are carried into an oven drier, and from there into a flow-coat paint booth, and then into a hairpin drier which operates at about 450° F. The resulting paint job is a hard, shiny, black finish which stands up extremely well under all salt tests and other accelerated weathering tests. This organic finishing equipment has to handle approximately 300 large structural sections per hour.

Sanitary ware fabrication includes single draw bathtubs

Lustron is equipped to produce its own bathtubs, sinks, and lavatories. The production of these units involves 1800-ton, 1000-ton, 600-ton, 400-ton, and 250-ton punch presses. The tub is produced with as few as five operations. On this basis the tub is drawn in one operation and there is no re-strike. The tub line is designed for a minimum number of operations as compared to other tub lines in the

country. The sink and lavatory, of course, have more operations than the tub.

Operations — after enameling

After panels are fabricated and enameled, the majority of them go to an assembly department where a plastic gasket, used to seal the joints of the panels, is applied to the edges with the aid of automatic mechanical equipment. In this setup the plastic material is applied to two edges of the panel and vulcanized electronically through holes in the panel in order to keep it secure. From this operation the panel is placed on a conveyor and carried to a station where glass wool insulation is automatically cemented to the inside of the panel. The panel is then ready for the shipping department. Fabrication of unit parts are scheduled through the plant to minimize setup expense and also to tie in with the color scheduling of the enameling department. Of the "would be" thousands of parts going into the house and the large number of houses being shipped per day, a very intricate scheduling problem was encountered; and the first thing that became obvious was the fact that all parts when once started in production have to keep moving until they reach their

shipping point. Any accumulation of stock piles or banks would soon clutter up the plant to the point of hindering the flow of production.

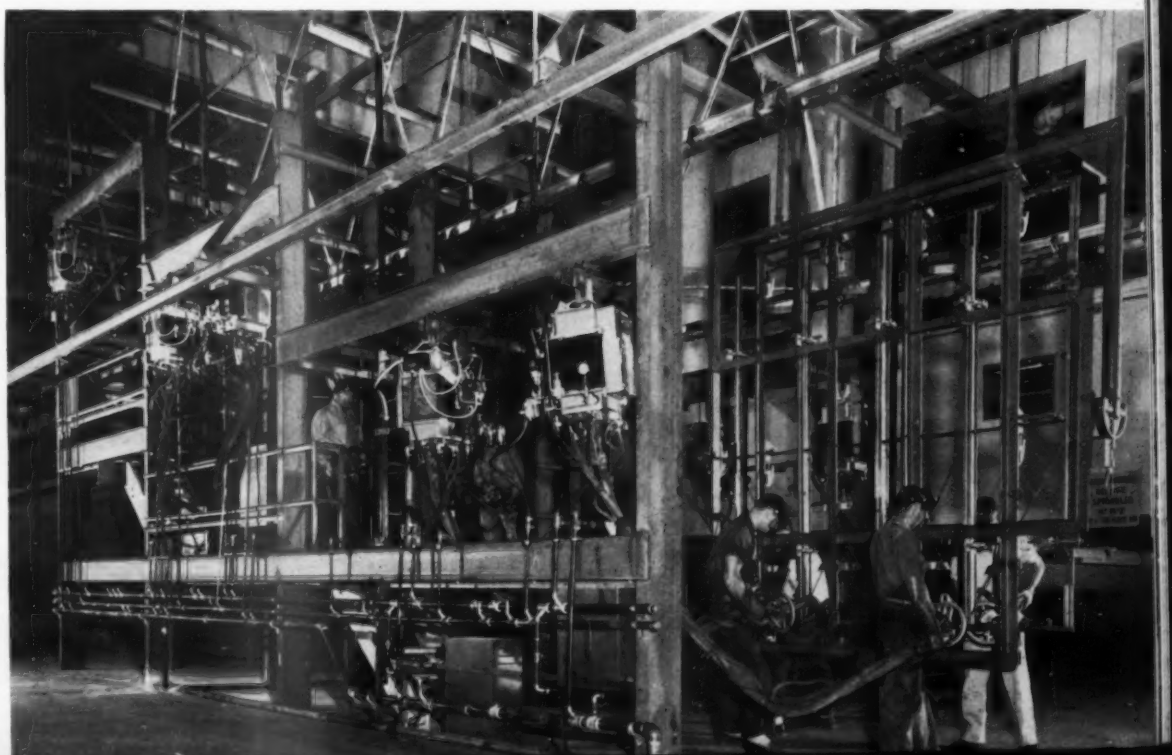
Packaging and shipping simplified

To ship one hundred houses per day has taken a considerable amount of planning by Lustron's packaging and shipping people who have developed a special carrier which will transport one complete house per truck. This method of transportation will eliminate a large amount of crating and packaging expense.

Roll equipment used

to fabricate cabinet units

One of the most attractive things in the Lustron Home has proved to be its abundance of cabinet space. In order to produce these units on a mass production basis and at a minimum cost Lustron designed its cabinets in order to facilitate the use of roll equipment for the forming of all standard panels. As a result, an attractive, convenient, set of cabinets has been produced at a minimum cost. In order to accomplish the above, it was necessary to get a multiplicity of identical parts in use. This same standardization in order to procure multiplicity of parts has been carried throughout the house.



of the elaborate welding stations for structural wall sections. A circular conveyor carries welding assembly fixtures. These fixtures are past 12 welding gun stations spaced at varying heights. Guns are counter-weighted to give operator of weight.

LUSTRON

produces the
American Home



The beautiful all-steel Lustron has been called
America's first truly low-cost, mass-produced home. All-steel
is built in a factory by the same mass-production, unit
assembly and precision methods which are used in the
automobile industry.

As in any plant based on mass-production, the press operations are of prime importance at Lustron. Geared into the production line the presses cannot fail without disrupting the entire line. To guard against failure Lustron engineers selected husky, dependable Warco Presses like the huge 600-ton, Two-point, 120-inch Eccentric Gear Warco Press shown at the right. Seventy-five other Warco Presses are delivering the goods at Lustron wherever forming, blanking, drawing, embossing or piercing is required.



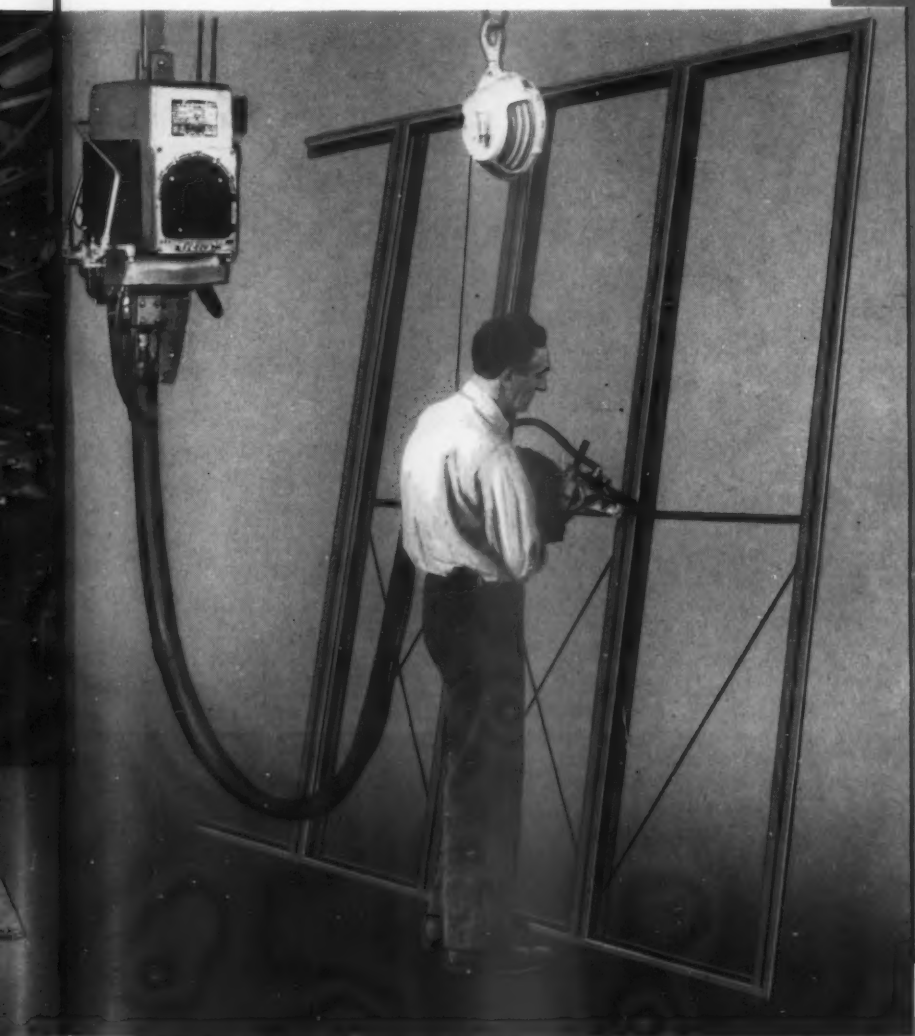
FROM 50-TON OBI TO 2000-TON DOUBLE ACTION

THE FEDERAL MACHINE

Dept. 5108, Plant 2, Warren, Ohio

the *American Way*

Some of the important features of structural design found in the popular home-all-steel Lustron Home are sturdy spandrel wall construction, welded resistance-welded, steel-frame wall sections and roof trusses. These advanced methods of home construction offer greater strength at costs far below average.



Each of the 26 wall structural sections of the Lustron calls for approximately 50 welds. In all, more than 16,000 welds are required in the construction of each home. To boost production and lower costs of this vast welding operation Lustron engineers chose Federal Welders. The photograph, left, shows a Federal 75-KVA Air-operated Portable Welder in action on a wall section of the Lustron Home.

Federal is equipped to handle every type of metal forming or resistance welding application. Let our engineers analyze your product and show you new economies in your press and welding operations.



ON RESISTANCE WELDERS FOR EVERY APPLICATION

FEDERAL WELDER COMPANY

• • Offices in Principal Cities

The Lustron

BATHTUB · LAVATORY and KITCHEN SINK DIES

are by **MARDIGIAN CORPORATION**

Dies shown are for the single deep draw operation required in the fabrication of the tub shown in the foreground.



The Mardigian Corporation is pleased to have been selected not only to style these important parts of the new Lustron home but to do the production engineering, designing and building of the dies for the Lustron Bathtub, Bathroom Lavatory, and Kitchen Sink.

Lustron plant executives and many other manufacturers, know from experience that dies that are designed and built by Mardigian require fewer operations and fewer presses, resulting in many savings

in operation and production costs as well as original tooling costs.

Mardigian Corporation designers, engineers and die makers have had years of experience with some of the largest corporations in the automotive, houseware and plumbing fields.

Competent engineers will assist you in any or all steps of planning and production from design to tryout samples.

for DIES call

MARDIGIAN CORPORATION

Complete Facilities for All Types of Stampings and Stamping Assemblies

1130 West Grand Boulevard • TYler 7-5301 • Detroit 8, Michigan

"The Finishing Touch"



The Bake Oven shown here is a component
part of one of the WORLD'S LARGEST FINISHING SYSTEMS

The complete system includes:

- POWER SPRAY METAL PREPARATION UNIT
- DRY-OFF OVEN
- AUTOMATIC ENAMELING FLO-COAT UNIT
- BAKE OVEN
- OVERHEAD TROLLEY CONVEYOR LINKING ALL UNITS
- ★ DESIGNED • ENGINEERED • MANUFACTURED
AND INSTALLED BY



The **SPRA-CON COMPANY**

1402 NORTH WESTERN AVENUE • CHICAGO 22, ILLINOIS

features of **DANLY PRESSES**

New ventilated air friction clutch—gives long trouble-free service under severe operating conditions. (Test shows negligible wear after 8 million engagements.)

Built-in automatic filtered oiling system—puts right amount of oil where needed—including flywheel bearings, Pitman wrist-pin bearings, and slide adjustment screws—increases press life—conserves oil.

Pitman wrist-pin design—permits precision fitting of component parts, assures closer operating tolerances, promotes longer press life.

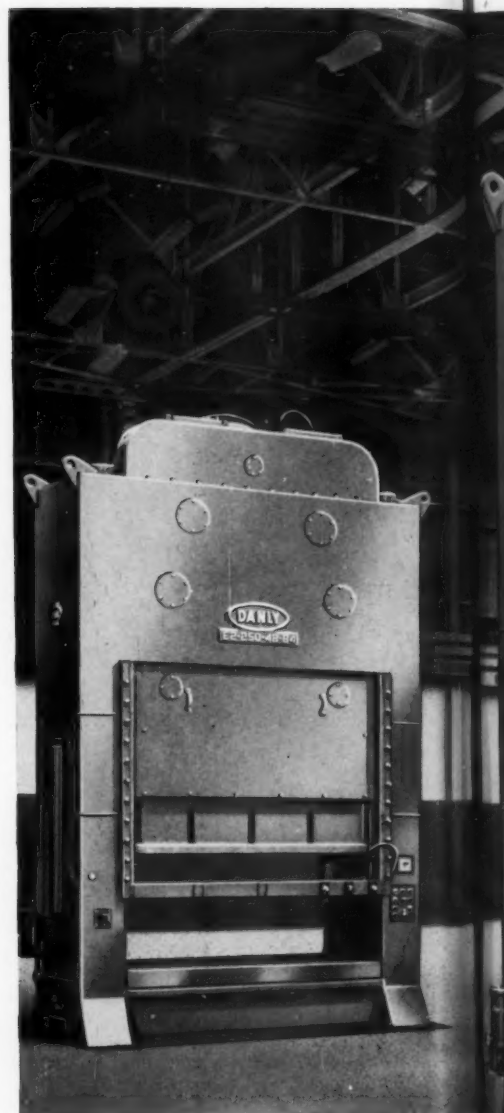
All-steel welded frame—stress-relieved after welding insures accurate, permanent alignment.

Air pressure and oil pressure safety switches—safeguard press, prevent operation should pressures drop below safety point.

Safe, convenient electrical controls—save time on die adjustments and add safety to trial strokes.

Balanced flywheel and clutch with air counterbalanced slide—insure quiet, smooth-running performance.

Extra long, bronze-lined adjustable gibs, precision-machined slide—assure long operating precision.



Two of the Danly 250-Ton Straight-Side Two-Point Eccentric Geared Presses pictured soon after installation at Lustron Corp., Columbus, Ohio.

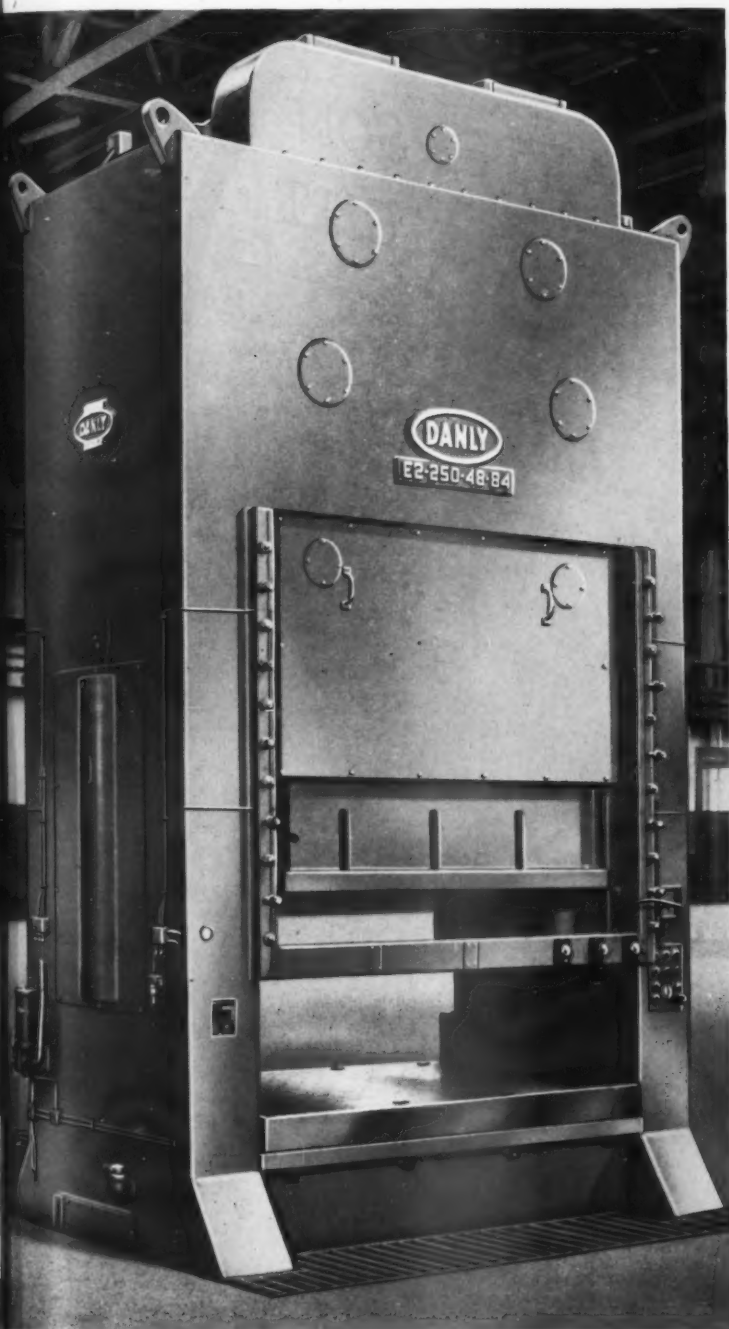


PRECISION DIE SETS . . . STANDARD AND SPECIAL

DANLY PRESSES TO SPEED OUTPUT AT

LUSTRON CORP.

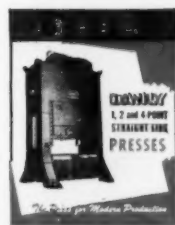
C O L U M B U S , O H I O



The first to adapt high-speed metal stamping techniques in the home construction field, the Lustron Corporation of Columbus, Ohio, is setting the pace for efficient production that is destined to lower costs of home building. As an aid to efficient production, they have selected Danly Presses for certain key operations in the manufacture of component parts of the new Lustron porcelain-enamel, steel fabricated homes. The Danly Presses will handle drawing, flanging, and trimming operations. 250-Ton Eccentric Geared Straight-Side Presses, 1000-Ton Double-Action, 500-Ton Straight-Side, and 50-Ton Horning Presses comprise the Danly battery at the Lustron plant.

All of these Danly Presses are equipped with the new Danly ventilated air friction clutch and built-in lubricating system, which increases production efficiency by insuring long life with less downtime and maintenance.

write
for
free
bulletin



DANLY MACHINE SPECIALTIES, INC.
2100 SOUTH 52ND AVENUE, CHICAGO 50, ILLINOIS

Write today for more facts about Danly Presses. Get complete details on their cost-saving features especially engineered to help you reduce downtime and increase production. Ask for specific recommendations or engineering assistance without obligation.



MECHANICAL PRESSER AND PRESS EQUIPMENT

25 YEARS OF DEPENDABLE SERVICE
TO THE STAMPING INDUSTRY

THE FORMULA
for **EVERY FINE FINISH**

**PATTERSON
EQUIPMENT
IN THE
MILL ROOM**



Patterson

SATISFACTORY

Machinery



Consultation on
your problems of
finish preparation.

THE PATTERSON FOUNDRY & MACHINE CO.

EAST LIVERPOOL, OHIO, U. S. A.

IN CANADA

THE PATTERSON FOUNDRY & MACHINE CO. (CANADA) Ltd., Toronto, Ontario

Richard L. Cameron

Metal preparation and finishing

in the ceramic division

By E. E. Howe • MANAGER, CERAMIC DIVISION



The fellow who insisted that there's nothing new under the sun could hardly have had Lustron in mind. Not only is our home a revolutionary product, so far as the housing field is concerned, but its manufacture has introduced a number of new and complicated problems to almost every phase of the operation.

This is particularly true with the porcelain enamel setup since we have had to keep in mind that we were dealing with not only a new product, but that this finished product was made up of hundreds of components of varying sizes and shapes.

Not limited in space or hampered by tradition

Fortunately we were not hampered by space limitation, for our plant is 1400 feet long, 340 feet wide and 35 feet to the under part of the roof trusses. In addition, a mezzanine, 100 feet wide and 20 feet above the floor, stretches the length of the modern building. The entire Lustron operation, with the largest job-enameling shop on a production basis in the world, will require full use of the 1,100,000 square feet available. This space enables us to have a layout that makes judicious use of area available to us, yet allows for an efficient operation.

Neither have we been hampered in our approach by tradition. Lustron is not the first to use porcelain enamel in the building field, but it is the first to plan it for homes. As a result, we were not content to follow many of the established lines in procuring equipment. Just as an automobile designer first drafts his plans on paper, then obtains a bill of ma-

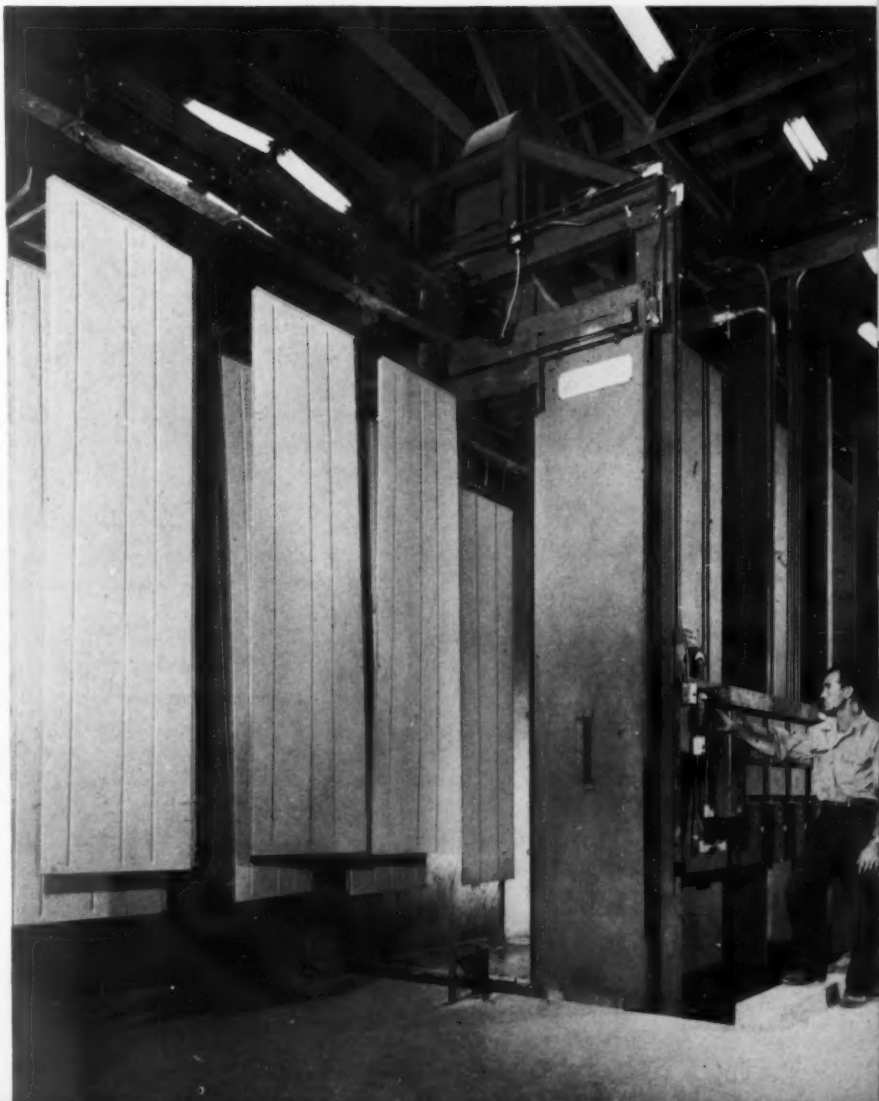
terial and specifications, so was a similar approach used here at Lustron.

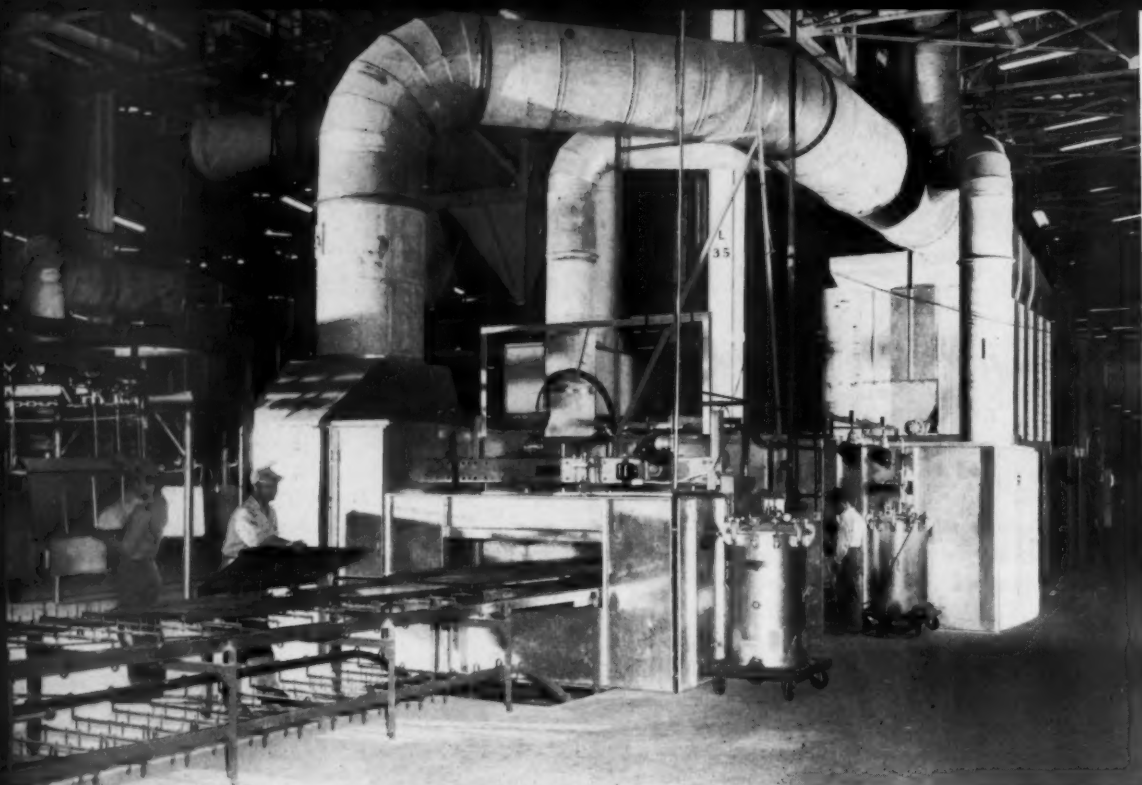
When the nature of the product to be coated was defined and the production requirements established, the layout then was the sole determining factor in the type, capacity and the

location of the needed equipment. Specifications for equipment were drafted, and the processes and materials were furnished suppliers so that their manufacturing could be done on an engineering basis.

We also followed much the same pattern in the recruiting of personnel.

Entrance end of one of two electrically heated continuous furnaces, 180' long, inside height 11'. Panel just inside furnace carries thermocouples for continuous recording of temperatures. Panels provide complete ware temperature record every 15 minutes. Furnace is equipped with kinetic air plugs and photo electric control equipment to prevent improperly suspended ware from entering.





Automatic spray booths for the application of cover coat to flat ware. Note the proximity of pressure conveyor at which feeds the type conveyor, some "plants" automatic spray machines are placed tandem to process rapid color changes over.

The field, of necessity, is limited because of the highly specialized nature of the work, and this added to the pressing problem of tooling up.

One hundred and twenty-six different piece parts required

Without trying to enlarge upon the many difficulties encountered in the manufacture of 126 different piece parts of varying requirements for a house, we might mention for those people who can appreciate porcelain enameling problems the added complications introduced by the use of different colors. Appliance manufacturers several years ago offered a variety of colors in porcelain enamel on their product and realized a simplification when all solid white was adopted.

For the present, Lustron, limited to one model, must achieve variety, in what has been up to now, an individualized field, through different exterior colors.

Eleven "plants" in one

To appreciate the magnitude of the operations, we might detail how equipment is used as depicted in the plant layout of the porcelain enameling section. Since the enameling section contains eleven furnaces, each furnace with its auxiliary equipment

for enamel application, such as spray booths and driers, is called an individual plant. In Plants 1 and 2, sanitary ware parts such as bath tubs, lavatories and sinks are processed. These two furnaces are serviced by a single-tunnel automatic spray pickling machine. Conventional blue ground coat is applied to the sanitary ware by manual spraying in Plant 1 and fired in the ground coat furnace. The two white cover-coat applications are made in Plant 2 which contains the cover-coat furnace for the sanitary ware. Plants 3, 4, and 5 contain enameling equipment designed to handle interior parts which are enameled in a one-coat, one-fire operation. These plants are serviced by one section of the large double-tunnel pickle machine. The remaining plants, 6 to 11 inclusive, are designed to process exterior parts which are a two-coat operation involving a base coat and a single acid-resisting cover coat. They, in turn, are serviced by one tunnel of a large double-tunnel pickle machine and the second large double-tunnel pickle machine. The entire section might be considered as divided into three major parts—exterior architectural panels, interior architectural panels, and sanitary ware components, all three major divisions, of course, receiving all their milled

enamel from the central mill room.

Mill room has capacity of 26,000 gallons per day

The mill room is designed to process quantities of frit of more than 200,000 pounds per day, utilizing mills which vary in size from 400 pounds up to 7,500 pounds. The variety of mills is required not only because of color but because of the types of frits needed. There are, for example, in any one house regardless of color variety, an architectural base coat enamel, an architectural one-fire enamel, an architectural acid-resisting cover coat, a sanitary ware ground coat, a sanitary ware non-acid-resisting cover coat, and a sanitary ware acid-resisting cover coat, making a total of six separate millings exclusive of color diversity. The basic thinking in connection with the mill room operation is to mill the enamels on the ground floor and pump to storage tanks located in the mezzanine floor. Enamel delivered to the various spray application locations is by means of pressure tanks of 60 and 120 gallon capacity which receive their enamel from the overhead storage tanks, with the enamel passing through the roto-spray and magnetic separator by means of gravity.



E.E. Howe—

needs no introduction to the ceramic finishing industry. His experience combines technical training, laboratory direction, and practical plant operation. "Gene" now heads the world's largest porcelain enameling facilities.

finishfoto

The majority of the enamel application is by spraying, both hand and automatic, although the architectural exterior panels are coated with a base enamel by dipping or by slushing, depending on the size of the part.

Metal preparation

Metal preparation of both architectural and sanitary ware parts is accomplished by automatic spray pickling type machines. All architectural ware is handled by two large double-tunnel machines which will handle parts up to 8½ feet in length;

sanitary ware parts are pickled in a single-tunnel spray pickling machine with vertical clearance for parts 5 feet in height.

The steps involved in the metal preparation for the architectural panels through these large machines are as follows:

	Time
Emulsion cleaning	1 minute
Rinse	40 seconds
Alkaline cleaning	1 minute
Rinse	1 minute
Hot sulfuric acid pickling	3¼ minutes

Rinse	1 minute
Nickel flash	4½ minutes
1st neutralizer	1 minute
2nd neutralizer	1 minute

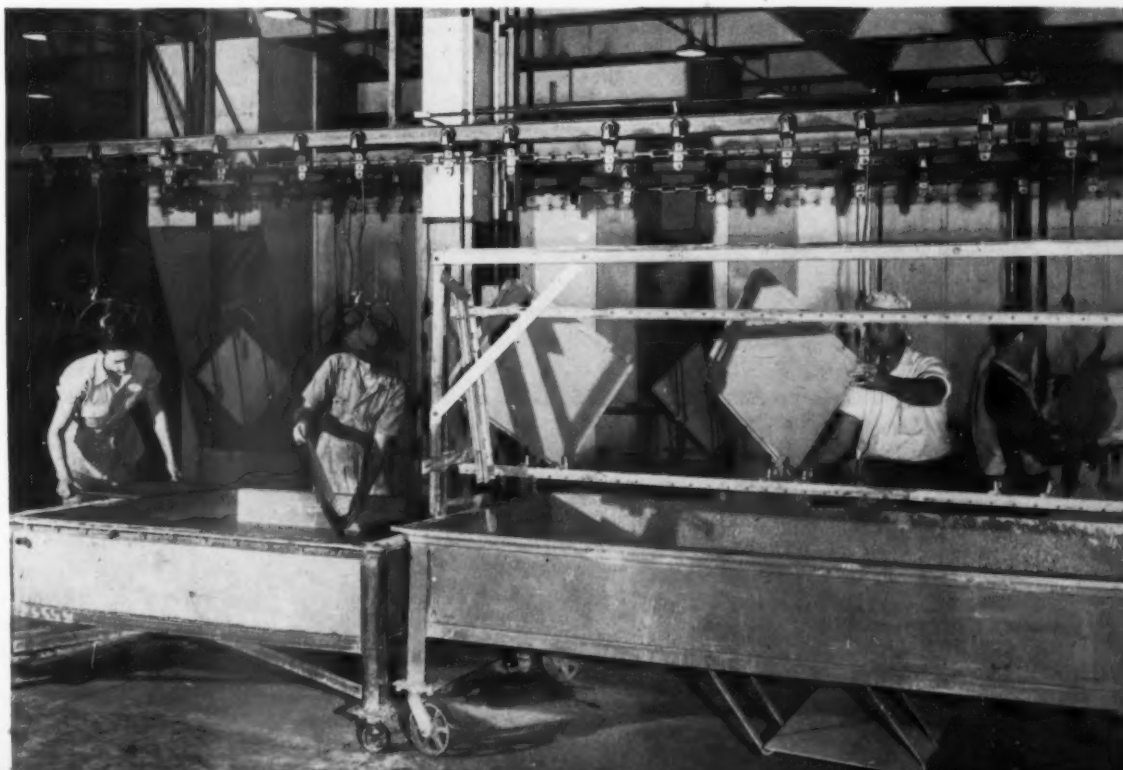
With the conveyor chain traveling at the rate of 80 inches per minute and the machine having a total length of 187 feet, it requires 27 minutes for the ware to go through the entire cycle. Total production capacity for each large machine is 34,000 pounds of ware per hour. Ware in the sanitary ware pickle machine receives the following cycle:

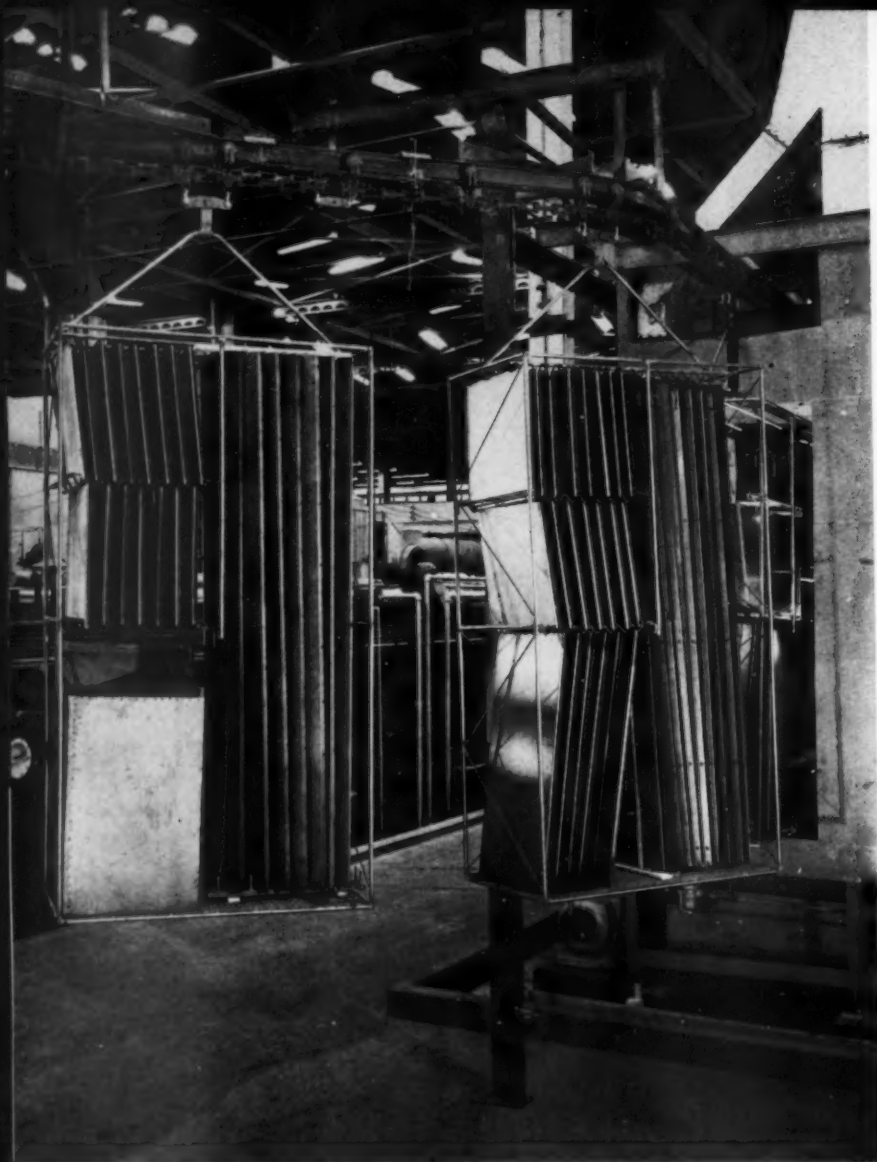
	Time
Emulsion cleaning	1 minute
Rinse	40 seconds
Alkaline cleaning	1 minute
Rinse	1 minute
Hot sulfuric acid pickling	3¼ minutes
Rinse	1 minute
Nickel flash	2 minutes
1st neutralizer	1 minute
2nd neutralizer	1 minute

This 150 foot long single-tunnel pickle machine has a rated capacity of 8,000 pounds of ware per hour.

It will be noted that the architectural panels receive exceptionally long nickel pickling times as compared to the sanitary, due to the importance of securing comparatively heavy nickel flash on parts to be

Conveyor from pickle machines delivers ware in pickling baskets to point immediately in front of these tanks. Ware is dipped, drained, and transferred to easels on conveyor in photo, which transports ware through the gas-fired, 3-pass ground coat oven. When setup is complete, dipped ware will be transferred direct to easels and drained enroute.





Loaded pickle baskets entering one side of a double tunnel continuous pickling machine. Note the especially constructed baskets for carrying architectural parts in sets. The baskets in view include a chimney housing, exterior corner panels, exterior surface panels, and interior panels. These baskets are constructed so that the carrier racks are adjustable for various size parts.

processed at the low temperatures employed in the firing process.

Dipping and "slushing"

The discharge of the pickle machines in the exterior line takes place in the dipping areas alongside the driers. Here small panels which can be dipped in tanks receive their base coat application in this way. Large or unwieldy parts have the enamel applied by ground coat forced through a hose under pressure, an operation which might be termed "slushing." After dipping or slushing, the parts are hung onto a mono-rail easel conveyor for transportation through the drier and through hand

reinforcing booths. The ground coated parts are fired on the outside of the furnace conveyor chain and are loaded onto flat lay-down conveyors for transportation through the automatic spray machines. Continuation of this conveyor through the drier and discharge to the furnace chain where parts are loaded on the inside and fired, completes the cycle for exterior panels. Packaging conveyors are located at the discharge end of the furnace where finished porcelain enameled parts are loaded onto the conveyor for transportation to the assembly building.

Since the interior panels do not receive a base coat, the application

of enamel to these parts does not involve a dipping or slushing operation. Pickled ware is transferred to easel conveyors which pass through hand spray booths for application of the enamel to the back side. This is done manually. The parts are then laid down on a flat pin-type conveyor, face side up, for the application of the enamel by automatic spray means. Subsequent operations are similar to the exterior panel line plants.

Tandem spray booths provide rapid change-over on automatic lines

In order to achieve rapid change-over of enamels on these automatic spray lines, standby booths have been installed which are situated in tandem on a common conveyor line. Certain lines which do not require rapid color change-overs have single automatic spray booths installed.

Although the major portion of the enameling production is composed of flat panels, there are several which deviate from a simple cross section. In some of the plants, provision has been made for spraying these odd or unusual parts which cannot be operated on the automatic lines. These unusual parts can be hand sprayed in the booth on a turntable and transferred to a pin-type conveyor drier or can be placed on easels for transportation through the spray booth in vertical position. Provision has been made for handling any shape part that constitutes the house.

Controlling 15,000,000 cubic feet of plant atmosphere

An unusual problem is presented by the large number of spray booths through which the exhaust blowers or fans must move tremendous volumes of air. If conventional practice were followed, it would be necessary to exhaust more than a million cubic feet of air to the outside each minute. With the particular building in which the enamel plants are located having a cubic content of 15,000,000 feet, the air would be changed once every 15 minutes. Through a unique arrangement in spray booth design known as venturi shielding, the amount of air handled is reduced to approximately 700,000 cubic feet per

minute. By dry collection in which the air is returned to the building, we are able to realize a considerable saving in capital expenditure for expensive air replacement systems — also fuel, and heating facilities for this air during the winter months.

Standby fuel provided for driers

All sprayed or dipped ware is dried in gas driers of the vertical or horizontal type. Gas is utilized as a fuel, except in winter months when gas is not available and propane as a standby liquid petroleum fuel is provided. The size and production capacity of the driers vary with the requirements for the various production rates established on the lines in which they are employed.

Low temperature enamels

for all architectural parts

With the exception of the sanitary ware, the enamel firing is performed at 1300° Fahrenheit. Both muffle and electric straight-away furnaces are employed in the architectural panels plants. The two sanitary ware furnaces are muffle type with the ground coat firing at slightly higher temperature than the cover coat as in conventional practice. The two sanitary ware furnaces have a rated capacity of 15,000 pounds of ware

and tools per hour, with an overall length of 150 feet equally divided into 50 feet of pre-heat, 50 feet of firing, and 50 feet of cooling. The height of the sidewalls is 7 feet, and width, 4 feet. Six of the muffle architectural furnaces are 180 feet long with 6-foot sidewalls and 4-foot width, and have a rated capacity of 19,000 pounds per hour. The small muffle furnace, with 4-foot high sidewalls and 3-foot width, has a length of 130 feet and a rated capacity of 12,000 pounds per hour. All muffle furnaces are equipped with combination gas-oil burners.

The two electric furnaces in the architectural panel line are rated at 29,000 pounds per hour and have an overall length of 180 feet, with an inside clearance of 11 feet high and 4 feet wide.

Furnace controls and accessories

All furnaces are completely equipped with controls for automatic operation and temperature recording. The large architectural gas muffle furnaces have four thermocouple installations in each which are connected to instruments that give full proportioning control with droop correction. The large electric furnaces have 32 zones of control, each automatically operated, but adjustable to

provide extreme flexibility in the furnace firing gradient. One unusual feature in the automatic recording of temperature has been employed on these electric furnaces. Baffle plates incorporated on the furnace chain have attached thermocouples that travel through the furnace and make possible a complete thermal record of furnace performance every 15 minutes.

All furnaces are constructed with air seals at the ends to minimize heat losses. The muffle furnaces utilize high-velocity air screens and the electric low-velocity air curtains, which are termed kinetic air plugs. These kinetic plugs, located at both the entrance and exit ends of the electric furnaces, consist of two-stage, recirculated, large mass, low-velocity air sections.

Another unique feature of the electric furnaces is the photoelectric device on the entrance end which establishes a prescribed silhouette and prevents improperly hung ware from entering the furnace by stopping the chain whenever the beam of light is broken.

Since the architectural panels are fired at 1300° F., advantage is taken of this low operating temperature for economical use of burning tools. 35-15 nickel chromium alloy is used,

One of the manual spray booths equipped with ventura shields for the control of shop air volume. While uniform size panels are shown in this photograph, most of the ware run through this type of booth will be unusual shapes not readily adaptable to automatic finishing. The conveyor carrier racks are adjustable to a wide variety of parts.



and the tools have approximately 60 per cent of the weight of that in conventional furnace tool design. By lightening the tools, a greater ware load is realized, and, of course, an economy in tool cost is secured by the lower alloy content of the metal.

Thousands of feet of conveyors for maximum mechanical handling

Wherever possible, mechanical handling has been employed for ware and materials; for example, in the enameling section alone, there are approximately 16,412 feet of monorail conveyor and 3,680 feet of pin-type conveyor. This is exclusive of the monorail conveyors which service the enameling plants with raw steel fabricated parts and carry finished enamel parts therefrom. Several different makes of monorail conveyors are employed—one in the pickle machine, another on the furnaces, another on the monorail and flat-type in the driers, and still another for the removal of sludge. A careful analysis of each handling problem was made, involving size of radii on turns, clearances, method of handling, speeds, and type of material transported.

Sludge conveyors handle

"waste" enamel

One unusual handling problem of considerable annoyance to the main-

tenance department has been dealt with through the use of a conveyor new to the porcelain enameling industry. Enamel which settles at the bottom of tanks in the wet collection section of the spray systems, mill room sumps, and sumps in the wash-off areas, is in an inaccessible place as well as being difficult to remove. By employing a special design in the bottom of these tanks and sumps, and by installing sludge conveyors, continuous removal to tote boxes is accomplished and the maintenance problem greatly reduced.

Production concept

imposes unusual problems

In general, this article covers the setting up of equipment to handle large production enameling in which more than 800,000 square feet of ware in a variety of color is processed daily. The variety of piece parts and diversity of color and quantities, introduce extraordinary scheduling problems. Added to this, is the problem posed by the entire philosophy of our program. Not only have we streamlined our production and placed it on a mass-production basis, but we contemplate no storage facilities for completed units.

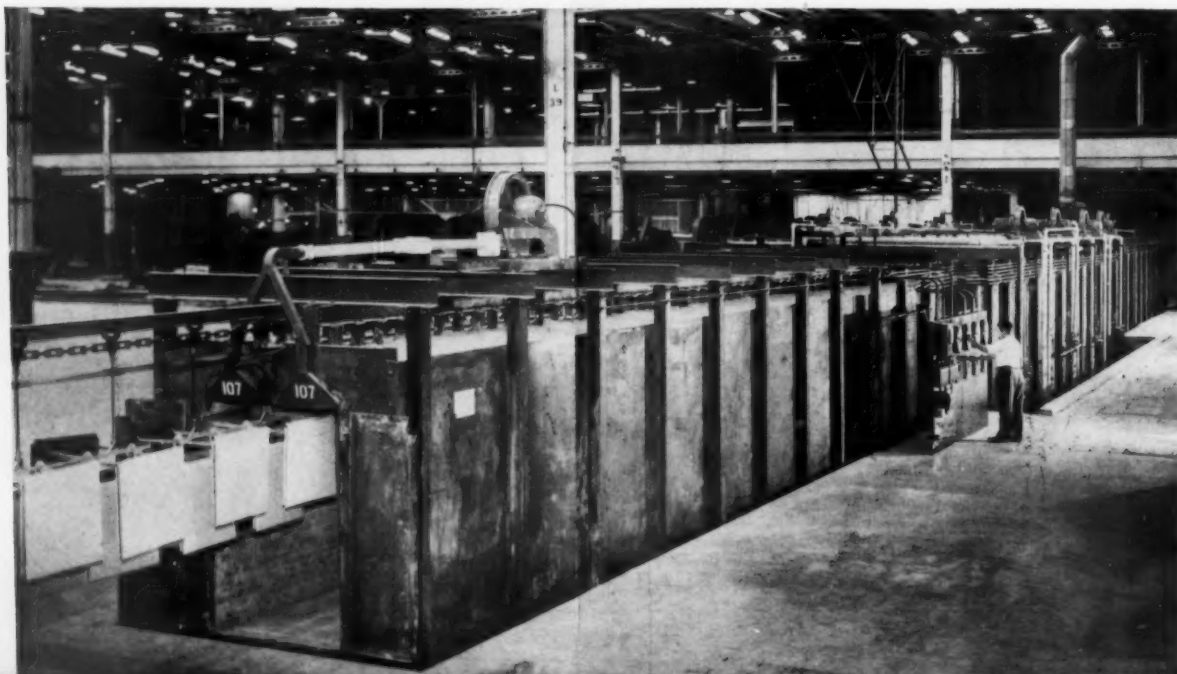
Our components are processed with the idea of producing a complete house about every 10 minutes when

we reach our peak. So, we must gear the enameling end of the operation along this line and not produce just for the sake of production.

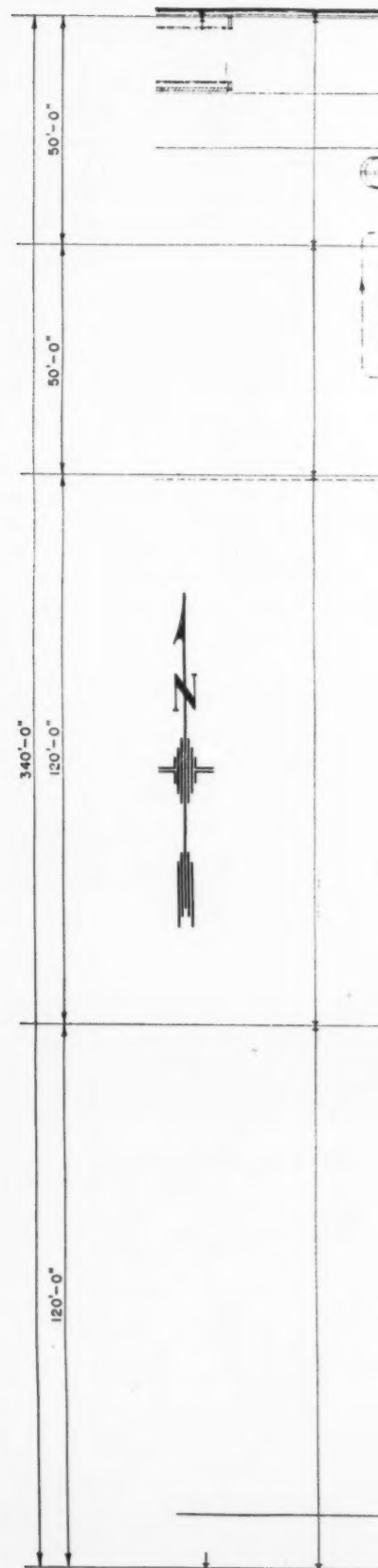
With the exception of a few piece parts which are fabricated from heavy gage, ware is of 20 gage metal and must be handled through the furnaces interchangeably with one-coat and two-coat operation regardless of the shape and size. Only a few items can be run on individual large production basis in order to provide packaging or assembly with components for complete houses every few hours. The relatively minor heavy gage parts do not fire out with the lighter gage material, and must be run separately.

To accomplish smooth operations of such large production, adequate control of material, process, and labor must be provided. Toward this end, adequate laboratory facilities for testing of all materials, both raw and manufactured, have been established in a general laboratory, centrally located. In addition, where possible, individual stations for control testing of operations are located throughout the plant. And finally, competent supervision is provided for the handling of the largest enameling plant in the world, which at peak operation involves employment of 1100 men.

One of six 180' high sidewall combination oil and gas-fired continuous furnaces, each designed to fire 19,000 lb. of ware and tools per hour. Furnaces are designed to operate from 500 to 1600° F. Actual operation is at 1300° F.

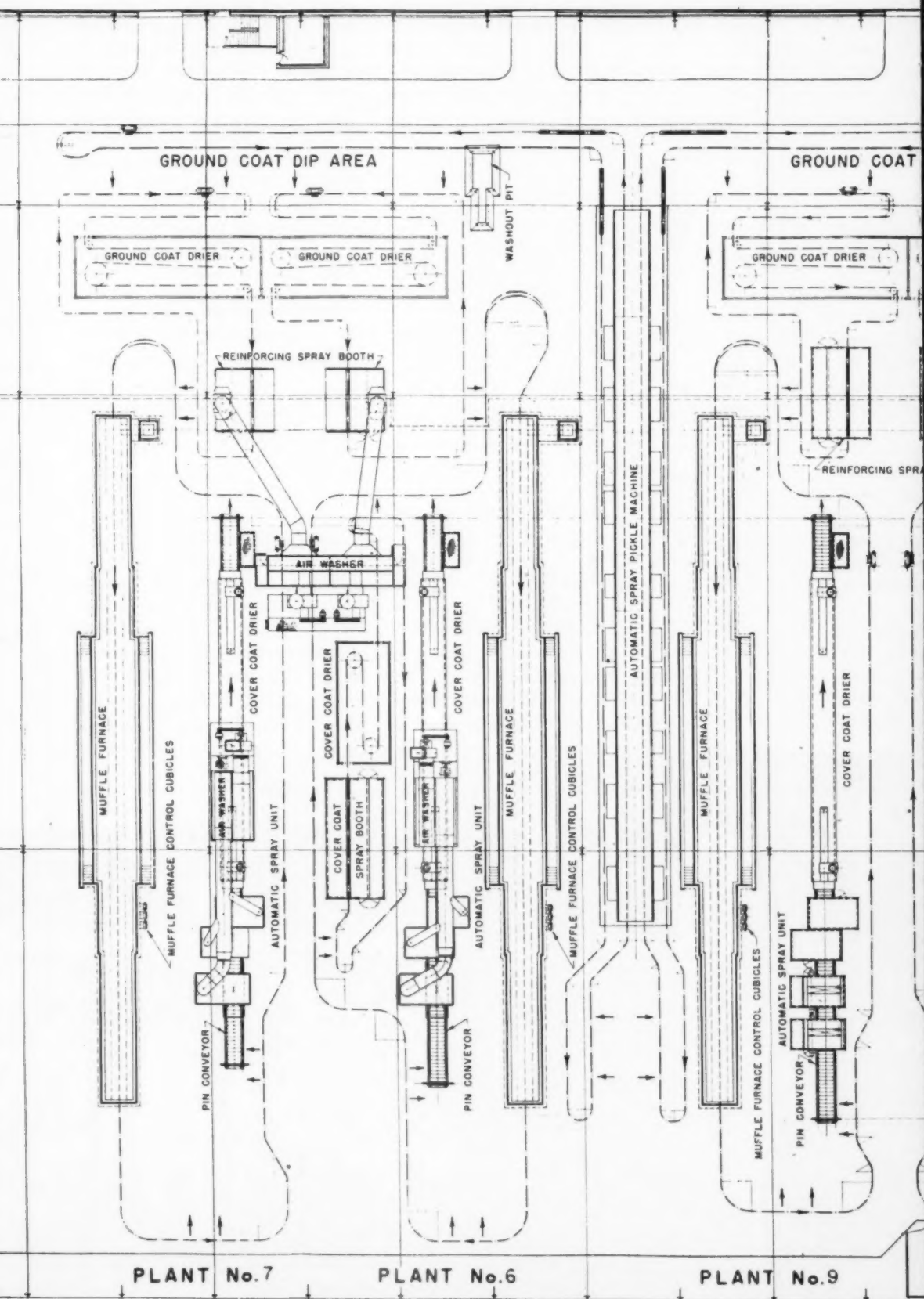


The Lustron

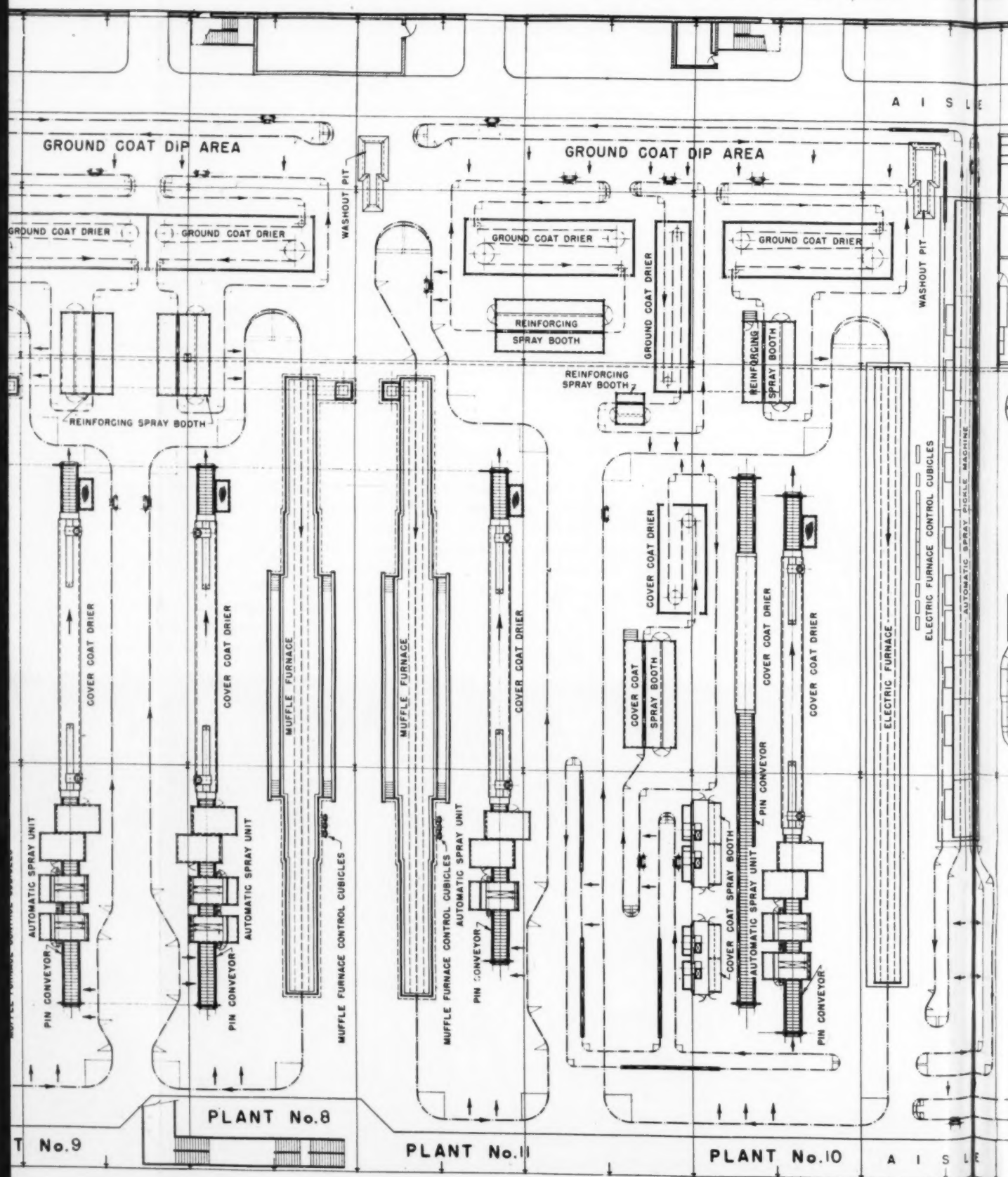


Iron plant... (ceramic division)

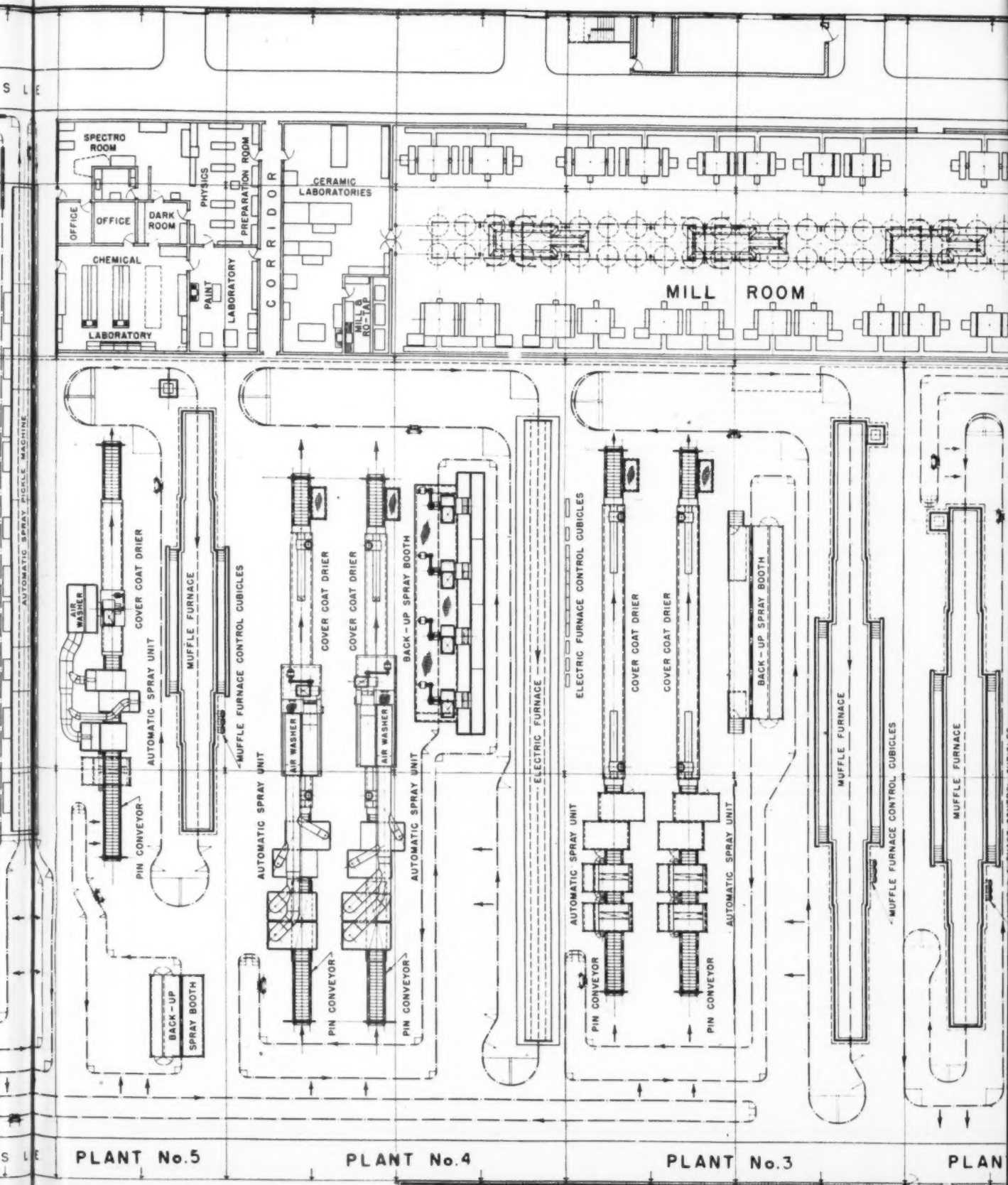
An eleven continuous



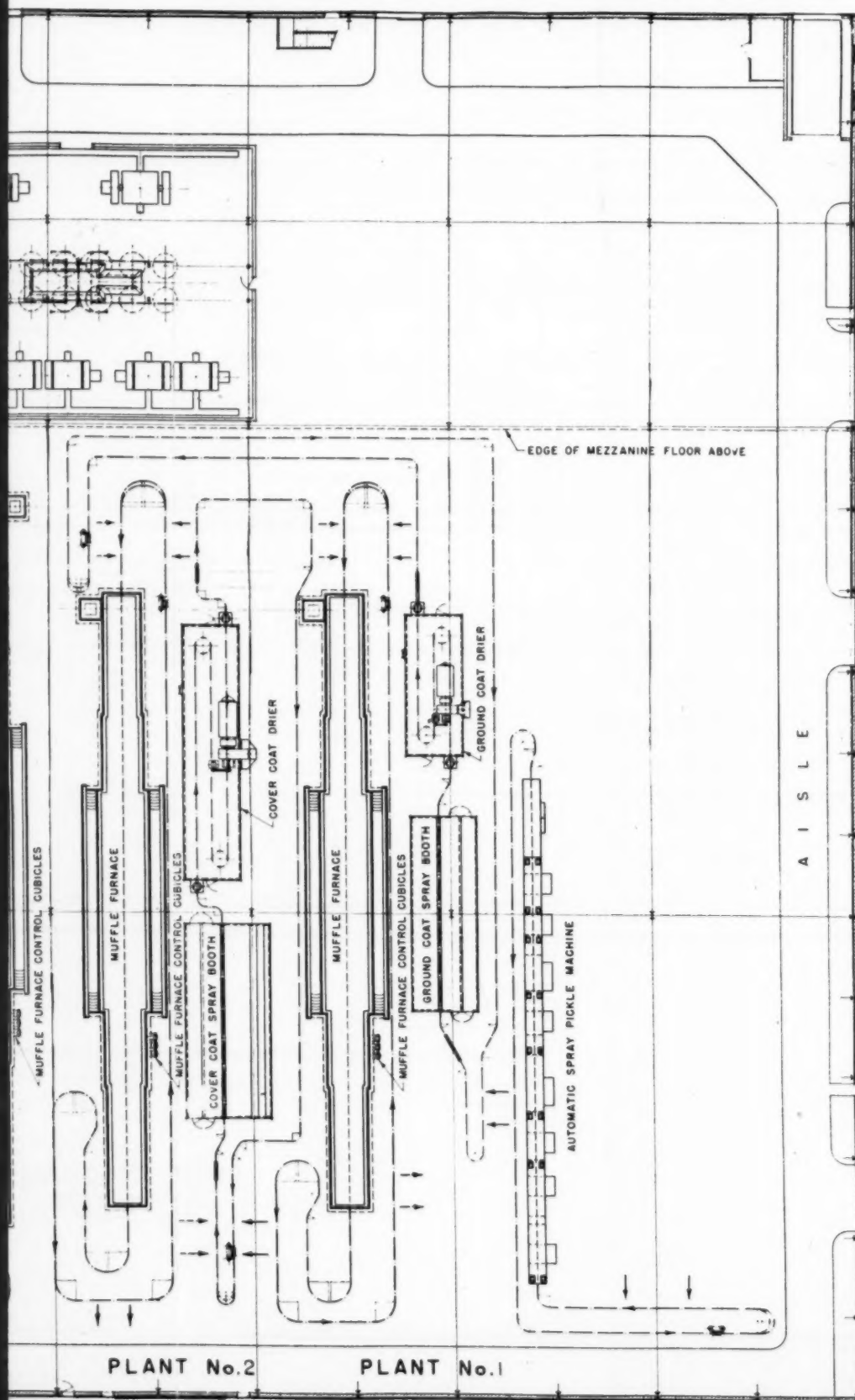
continuous furnace porcelain enameling plant for



architectural parts and sanitary ware



(see complete plant flow sheet - next page)



PLAN

(These facts p
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plant on the f

Two buildings
clusive of offic
200'. Each bui
the largest 140

Working height
under mezzani
15'.

Total floor a
(Approximate)

Fabrication:
brakes (15 T
and 12 rolls.

Assembly: 20
chines.

Organic finish
world's larges
4 paint mixing
spray bonderiz

Mechanical
conveyors, 3
buildings, 4 r
head cranes.

Ceramic Divis
pickling machi
netic separator
42 enamel sto
coat dip units
forcing booths
18 automatic
spray booths
23 driers, 11

M
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562,500 tons o
of enamel frit
oxide; 1,800,
5,400,000 lbs.

PLANT FACTS

These facts pertain to both the detailed enameling plant drawing on pages 10 and 11 and the simplified drawing and flow sheet of the complete plant on the following pages.)

PLANT

Buildings: one 1400' x 340' (exclusive of offices) and one 1000' x 340'. Each building has a mezzanine, the largest 1400' x 100'.

Clearing heights: Main area, 35'; on mezzanine, 17'; on mezzanine, 17'.

Net floor area: 1,100,000 sq. ft. (approximately 23 football fields.)

EQUIPMENT

Rolling: 160 presses and press rolls (15 T to 1800 T), 12 shears and 12 rolls.

Assembly: 200 welders, 8 rivet machines.

Paint finishing: 4 spray booths, world's largest flow coat machine, paint mixing units, world's largest bonderizing unit.

Mechanical handling: 8 miles of conveyors, 3 bridgeways between buildings, 4 railway sidings, 6 overhead cranes.

Paint Division: 3 continuous spray painting machines, 26 mills, 12 magnetic separators, 13 centrifugal sieves, enamel storage tanks, 7 ground dip units, 7 ground coat reining booths, 11 hand spray booths, 22 automatic spray booths, 22 hand spray booths (following automatics), 11 furnaces.

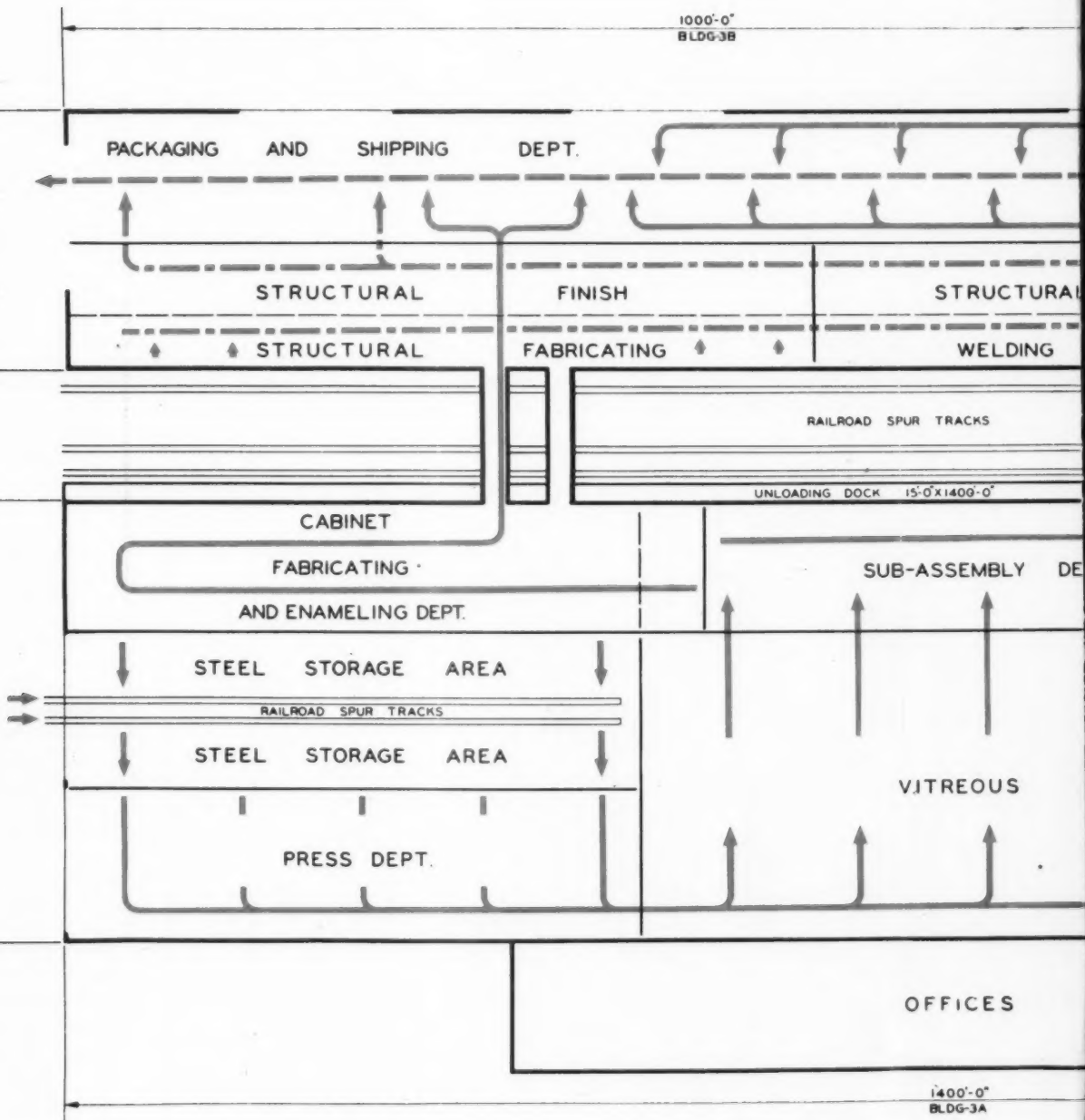
MATERIALS

(For production of 45,000 houses per year)

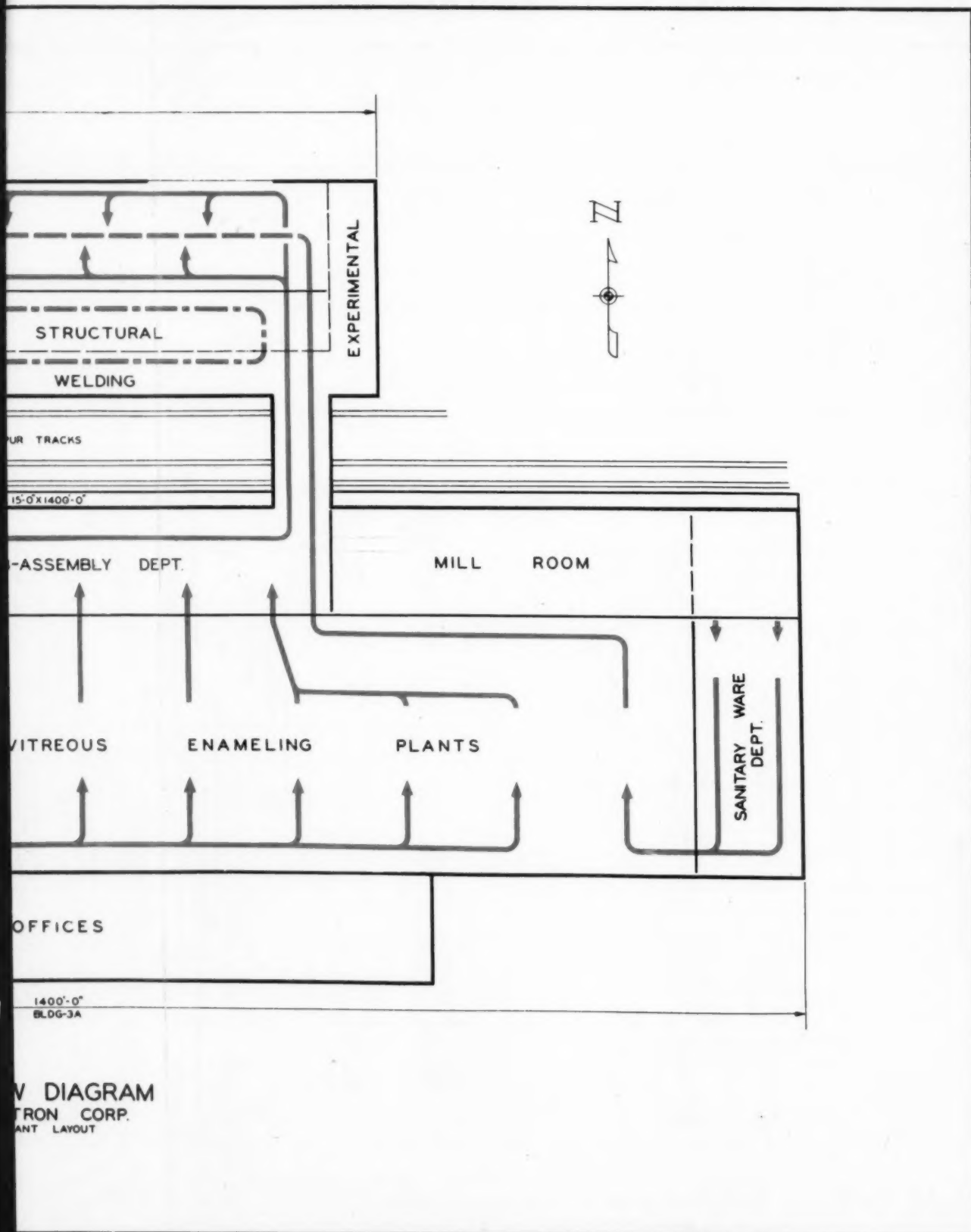
500 tons of steel; 90,000,000 lbs. enamel frit; 900,000 lbs. of color; 1,800,000 lbs. of opacifier; 10,000 lbs. of clay.



finish OCTOBER • 1948



FLOW DIAGRAM
LUSTRON CORP.
PLANT LAYOUT





Ten Rotosprays...

in the first LUSTRON order



WHEN Lustron engineers specified equipment for the world's largest enameling plant, they chose Rotospray, the rotary spray sifter, as the standard method of sieving all porcelain enamel slip. Ten standard model Rotosprays were included in the original Lustron order.

Whether you manufacture architectural porcelain for homes, sanitary ware, appliances, furniture, lighting reflectors, signs — or whatever porcelain enameled product you make — be sure your liquid enamel is clean and uniform by using Rotospray, the modern way of sieving enamel slip.

You can improve quality in your finished products, save time and labor in the mill room, and save money in your overall production costs if your plant is properly equipped with the right number and the right size Rotosprays.

To be sure you get the right Rotospray for your job, contact Rotospray direct... or one of our authorized sales representatives.

Sales representatives —
B. F. DRAKENFELD & CO., INC., New York, N.Y.
PEMCO CORPORATION, Baltimore, Md.
O. HOMMEL COMPANY, Pittsburgh, Pa.
FERRO ENAMEL CORP., Cleveland, Ohio and foreign offices
CHICAGO VITREOUS ENAMEL PRODUCT CO., Cicero, Ill.

ROTOSPRAY
(Reg. U. S. Pat. Off.)

BRAUN CORPORATION, Los Angeles, Cal.
BRAUN KNECHT & HEIMANN CO., San Francisco, Cal.

Foreign representatives —
WATFORD ENGINEERING WORKS, Watford, England
ELOF HANSSON, Gothenburg, Sweden

ROTOSPRAYS ARE ALSO USED EFFECTIVELY IN CHEMICAL PLANTS, PAPER MILLS, AND POTTERIES

ROTOSPRAY MANUFACTURING COMPANY

562 WASHINGTON BOULEVARD • CHICAGO 6, ILLINOIS • TEL. DEarborn 2-7196

The World's Largest

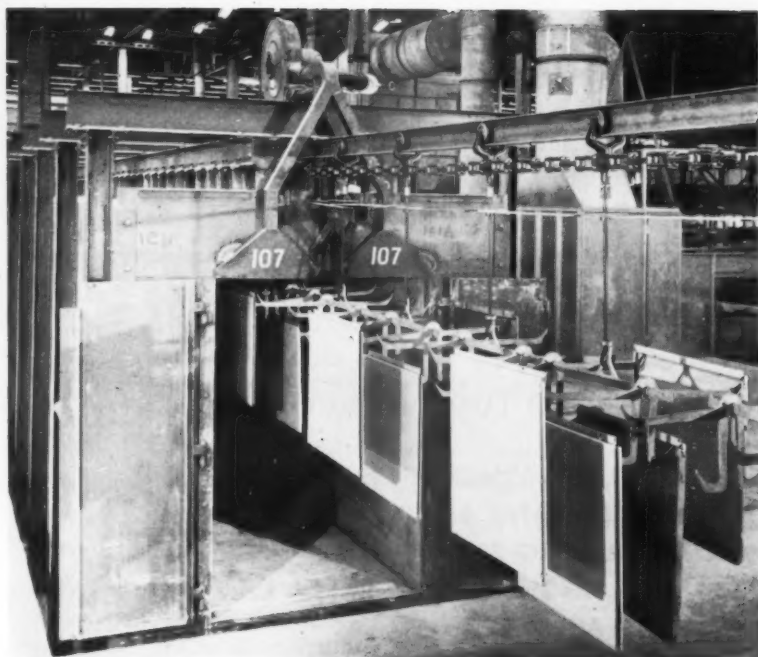


This is the first of nine Boland STRAIGHT AWAY—SINGLE FLOW continuous furnaces to get into production at the new LUSTRON plant in Columbus, Ohio. All of these furnaces, together with two electrically heated furnaces by another builder, have the famous Boland FLOATING ROOF construction. All in all, this represents the completion of the world's largest porcelain enameling furnace installation—completed in record time by Boland.

Designers and Builders of Continuous and Box Type Enameling Furnaces

Furnace Installation

by **BOLAND**



Nine at Lustron

6 furnaces for architectural parts are 180' long, each having 60' pre-heat chamber, 60' burning chamber, and a 60' cooling chamber. Tunnels are 48" wide by 72" high. Maximum total load 19,200 lbs. per hour, at 1600°F. Fired with 11 combination gas-oil burners in 4 individually controlled firing zones. Furnaces built to operate from 500 to 1600° F. with a variation of $\pm 10^\circ$.

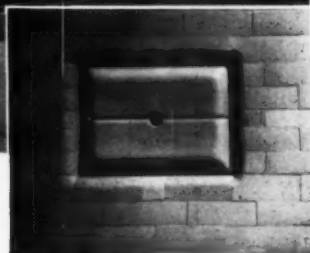
2 furnaces for sanitary ware, 150' long, 50' preheat, 50' burning, 50' cooling. Tunnels 48" wide by 84" high. Maximum total load 15,000 lbs. per hour at 1600° F. Fired with 9 gas-oil burners in 3 individually controlled firing zones.

1 furnace for miscellaneous parts 121' long, 42' preheat, 37' burning, 42' cooling. Tunnel 36" wide by 60" high. Maximum load 10,000 lbs. per hour at 1600° F. 7 combination gas-oil burners for 2 individually controlled firing zones.

→ **ALBERT J. BOLAND COMPANY**

407 NORTH EIGHTH BUILDING • ST. LOUIS 1, MO.

We are MIGHTY
 PROUD
that
 LUSTRON
uses
 McDANEL
 hand-rolled
 GRINDING BALLS
and
 McDANEL LINING BRICK



View from interior of mill showing McDanel lining incorporating special shaped door and frame brick used with McDanel Mill Head Assembly.

Here in the world's largest enameling plant—as well as in hundreds of other plants throughout the country—McDanel Refractory Porcelain Products are giving outstanding performance.

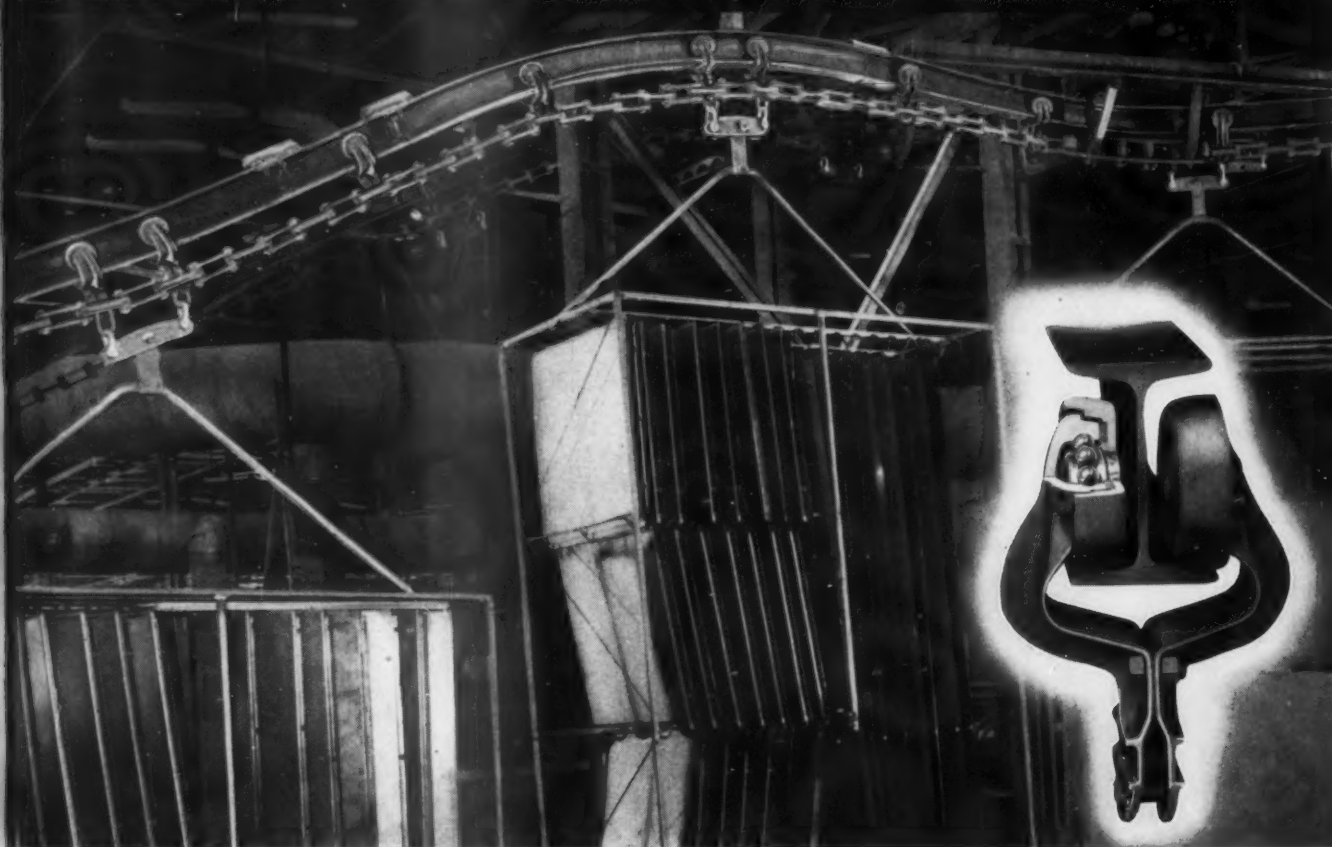
We are proud of the reputation our products have gained over the years and of the part they are playing in the making of Lustron Homes.

HAND ROLLED PORCELAIN GRINDING BALLS
STANDARD MILL LINING BRICK
SPECIAL MILL LINING SHAPES
METAL COVERED GRINDING JARS AND MILLS
MILL HEAD ASSEMBLIES
DOOR LINING BLOCKS
PORCELAIN GRINDING JARS AND MILLS

Chicago Vitreous Enamel Product Co., Cicero 50, Ill., exclusive representative for the enameling industry

McDANEL REFRACTORY PORCELAIN CO.
BEAVER FALLS, PENNSYLVANIA

Through the Pickle on Link-Belt Overhead Trolley Conveyors



Panels for the Lustron Home Get Their Faces Washed in Largest Automatic Machines

Engineered for vast production, Lustron Corporation's new plant surpasses any existing porcelain enameling plant in total size, as well as in size of individual units. Metalwash Machinery Company supplied the largest continuous, automatic spray pickling machines ever built. Link-Belt Overhead Trolley Conveyors, 850-ft. long each, carry panels up to 8 ft. high through washing and rinsing baths, from loading to unloading zones. A Link-Belt Overhead Trolley Conveyor also handles sanitary ware thru a similar pickling operation. Five complete separate Link-Belt Overhead Trolley Conveyors are required to handle ware that is pickled in this vast plant.

In many mass-production industries, Link-Belt Overhead Trolley Conveyors supply the simplest,

most efficient transportation of parts or products through various processes. They can be arranged for mono- or multi-plane service, for light, medium or heavy loads, for constant or variable speeds. In short, to suit your special application!

Call the nearest Link-Belt office. Ask for a Materials Handling Engineer. His suggestions are valuable. Send for literature.

OTHER TYPES OF LINK-BELT CONVEYING MACHINERY

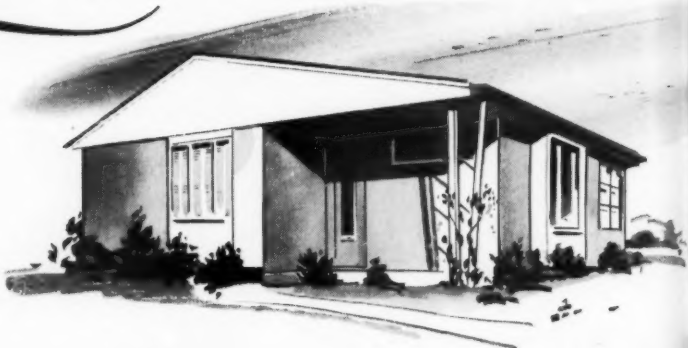
Belt Conveyors	Chain Conveyors	Oscillating Conveyors
Screw Conveyors	Trolley Conveyors	Flight Conveyors
Bulk-Flo Conveyors	Apron Conveyors	Bucket Elevators
		Bucket Carriers

11,281
LINK-BELT COMPANY Chicago 9, Indianapolis 6,
Philadelphia 40, Atlanta, Dallas 1, Minneapolis 5, San Francisco 24,
Los Angeles 33, Seattle 4, Toronto 8. Offices in Principal Cities.

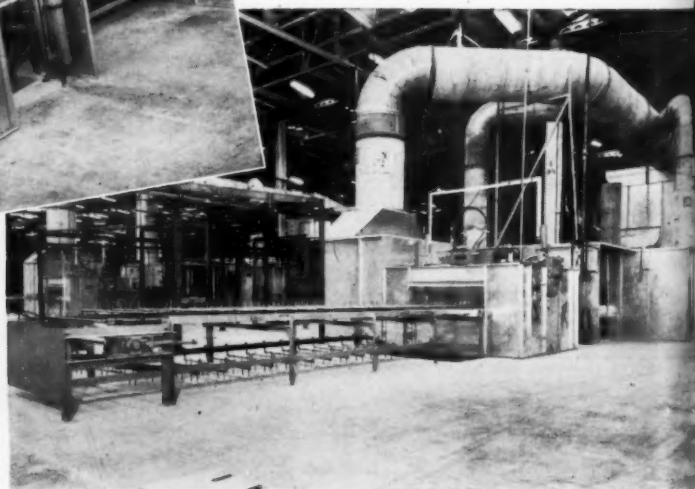
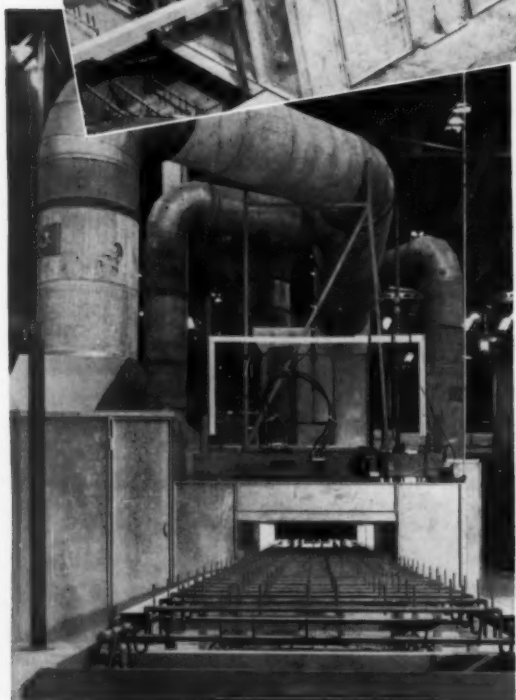
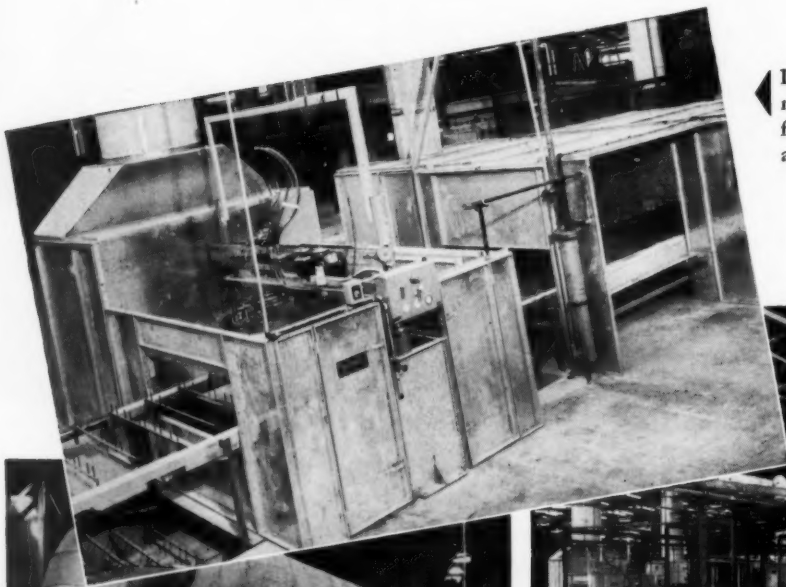
LINK-BELT
CONVEYING MACHINERY

LUSTRON HOMES GET A

The lifetime Lustron home pictured here is of porcelain enameled steel . . . fire-proof . . . decay-proof. Sunlight, salt water, or chemical fumes cannot stain or fade the beautiful finish.



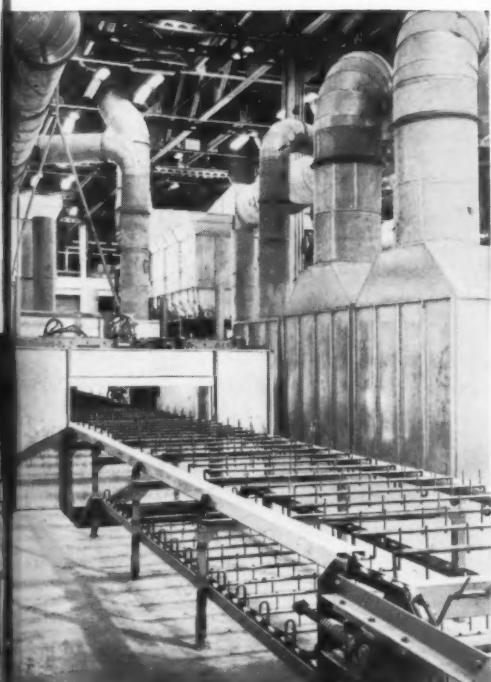
DeVilbiss automatic transverse machines such as this apply uniform coatings on flat panels with amazing speed and economy.



Interconnecting exhaust ducts utilize an efficient single exhaust blower to withdraw oversprayed material from the batteries of spray booths.

Conveyors feed panels from loading stations through DeVilbiss automatic spray machines, and edging booths in a continuous cycle.

A LIFETIME BEAUTY TREATMENT FROM **DEVILBISS** **HIGH-SPEED FINISHING SYSTEMS**



▲ Elevated Devilbiss water wash exhaust chambers serve multiple spray booths. This combination of dry and wet exhaust chambers arrest approximately 98% of the oversprayed solids and requires little mechanical maintenance.

● America's greatest mass production industries are watching history being made at Lustron. Never before has such a gigantic and complex home building program ever been attempted. For the first time steel homes are completely built on a production line basis and every exposed part is porcelain enameled inside and out.

Porcelain enameling on such a large scale presented one of the most crucial production problems. Devilbiss is proud to have played a prominent part in providing complete finishing systems that make such tremendous production possible. With each step of the enamel application integrated into a unified system, processing is practically automatic—finer, more uniform finishes are obtained—more pieces are produced per hour—and costs are low because handling is reduced to a minimum.

Here is another impressive example of the specialized engineering service rendered by Devilbiss. Your Devilbiss engineer will gladly show you how Devilbiss Ceramic Spray Equipment will save you time and money and improve the quality of your products.

THE DEVILBISS COMPANY • Toledo 1, Ohio

Canadian Plant: Windsor, Ontario

DEVILBISS

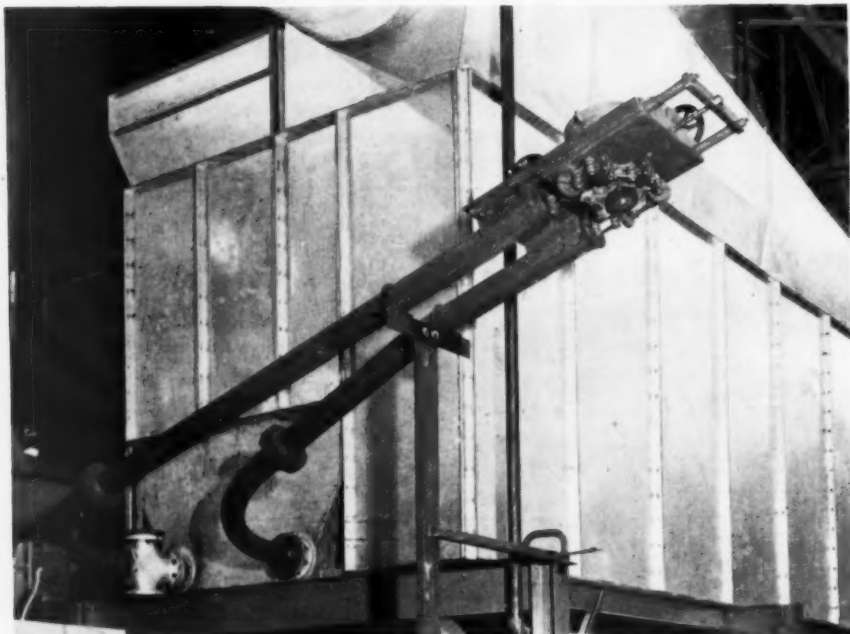
means Quality in all four..



**SPRAY EQUIPMENT
EXHAUST SYSTEMS
AIR COMPRESSORS
HOSE & CONNECTIONS**

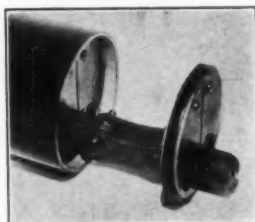
A Hapman Pipe Conveyor

will answer your sludge clean-out problems



Left: Photograph of one of 12 pipe sludge conveyors installed at Lustron. This unit removes reclaim enamel from a collector room serving automatic spray machines. (Discharge hopper under drive not shown).

The photo below illustrates construction of Hapman rubber flighted chain. These chains convey any flowable material such as reclaim enamel, clay, glass, shot, cullet, fluxes, and follow a bent pipe in any direction.



YOUR clean-out problems from spray booths, dust collectors, mill room trenches, etc., can be readily handled, as at Lustron, with Hapman sludge conveyor equipment.

Hapman sealed pin conveyor chains, with synthetic rubber flights, were designed for handling free-flowing abrasive dusts and sludges. Typical of these materials are emery, carborundum, cast iron dust and chips, foundry sands, porcelain enamels and quench tank sludge.

Collected abrasive dusts may be removed con-

tinuously or intermittently from hopper bottoms without disturbing collector fans, or the air pressure or vacuum existing within the collector. Discharge point can be located in any direction and any reasonable height or distance from collection point.

Long life, low maintenance, silent operation, minimum space requirement, positive dust control, and low power consumption are noteworthy features.

No feeders are required. Hapman conveyors are self-cleaning.

ORIGINATED BY HAPMAN

PROVEN BY YEARS OF FIELD USE

ENGINEERED TO CUSTOMER'S REQUIREMENTS

Hapman sludge conveyors are fully covered by U. S. Patents with Canadian and foreign patents pending and applied for.

Send for Catalogue No. 4748. If you enclose a print or sketch showing your handling problem, our engineers will suggest a solution.

HAPMAN CONVEYORS, Inc.

2405 WEST McNICHOLS ROAD

DETROIT 21, MICHIGAN

INTERNATIONAL MILLS

**HAVE EARNED AN IMPORTANT PLACE IN PORCELAIN
ENAMELING PLANTS EVERYWHERE!**



One Group of Internationals at Lustron

and now they're at Lustron — 16 of them!

Their sturdy all-steel welded construction . . . their ball and socket type mill bearings . . . their solid extra heavy diameter steel (not cast iron) trunnions or shaft . . . their modernly designed, machined stands . . . their two types of inching devices . . . their nine different drive arrangements . . . their McDanel Mill Head Assemblies and McDanel Lining Brick — 7 good reasons in themselves for being the No. 1 choice of experienced enamel plant men. Certainly these exclusive and outstanding features cannot be over-emphasized. But it's not only

these features that "sell" enamel plant men — and keep them "sold." It's the completely dependable service INTERNATIONAL MILLS render "on location." It's the consistent daily operation at peak efficiency with none but the minimum of maintenance that helps assure lowest cost millroom operation. And this kind of operation is standard in porcelain enameling plants across the land with INTERNATIONAL MILLS.

No wonder you see more and more of them wherever you go.

INTERNATIONAL ENGINEERING, INC. DAYTON, O.

how to finish ACRES OF PORCELAIN

Binks installation at Lustron Corp. shows latest techniques...

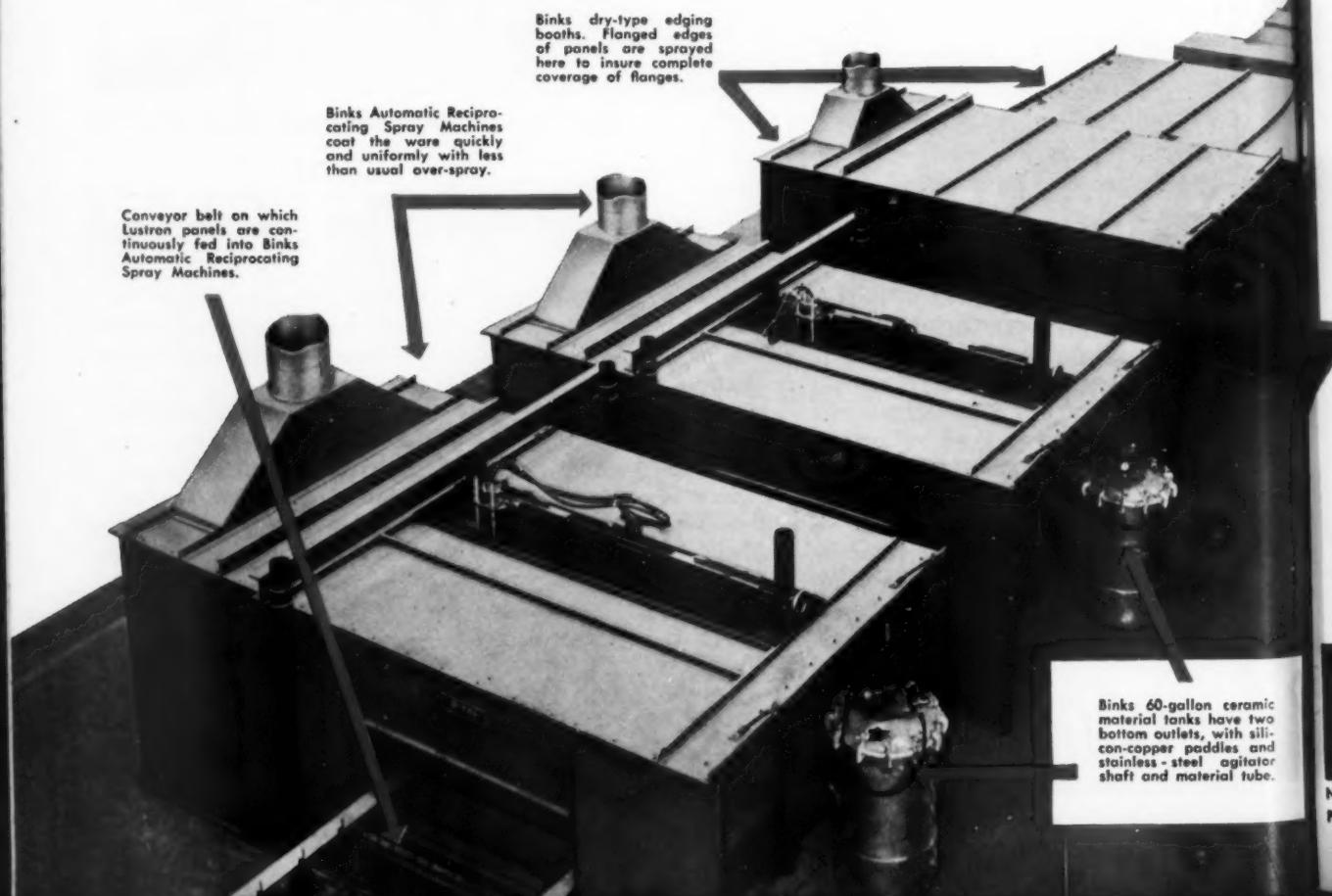
Even if it could be done manually and workers were tireless robots—which they aren't—it would still be more economical to spray Lustron panels automatically, because of the absolute precision with which the spray can be controlled for overlap and thickness of film.

These, of course, are the practical reasons why Lustron panels are sprayed automatically . . . in 10 Binks Automatic Reciprocating Machines, all of which are specially built to give a 66-inch stroke across the panels as they progress through dry-type ceramic spray booths. As the panels leave the Reciprocating Machines they move directly into a pair of Binks dry-type edging booths (which face in opposite directions). Here the side flanges are sprayed. In all, 22 Binks dry-type

booths for manual work are used in the Lustron plant.

Spray heads in the Binks Automatic Reciprocating Machines are equipped with four Binks Model 7RV guns especially constructed for spraying vitreous enamel, having stainless-steel parts at points of greatest wear, with tungsten-carbide inserts in the material nozzles and needle valves.

The spray guns in Binks Automatic Reciprocating Machines automatically shut off as they pass beyond the edge of the ware and turn on again when they reach the edge on the return trip. The points at which the guns turn off and on can be adjusted for various widths of ware. This operation saves considerable material.



Binks dry-type edging booths. Flanged edges of panels are sprayed here to insure complete coverage of flanges.

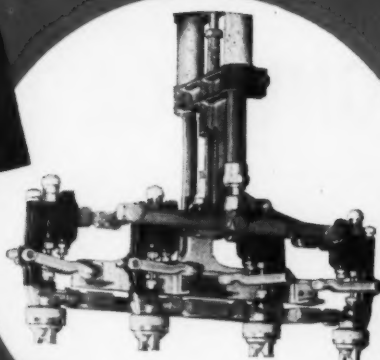
Binks Automatic Reciprocating Spray Machines coat the ware quickly and uniformly with less than usual over-spray.

Conveyor belt on which Lustron panels are continuously fed into Binks Automatic Reciprocating Spray Machines.

Binks 60-gallon ceramic material tanks have two bottom outlets, with silicon-copper paddles and stainless-steel agitator shaft and material tube.

ENAMEL

automatically



BINKS AUTOMATIC RECIPROCATING SPRAY MACHINE

The Binks Line is complete . . . consists of everything related to spray-finishing equipment and for use with any kind of finishing material. Binks engineers are always available for consultation and information regarding your special problems . . . write or wire us when we can be of service.

IF IT'S FLAT — a Binks Automatic Reciprocating Machine will speed up your production, lower your costs, and give you better finishes.



"The Binks organization is especially proud of the confidence placed in it by the vitreous-enameling industry and the advances Binks has made in its interest."

J. J. Roche

President

Binks MANUFACTURING COMPANY

3122-40 Carroll Avenue, Chicago 12, Illinois

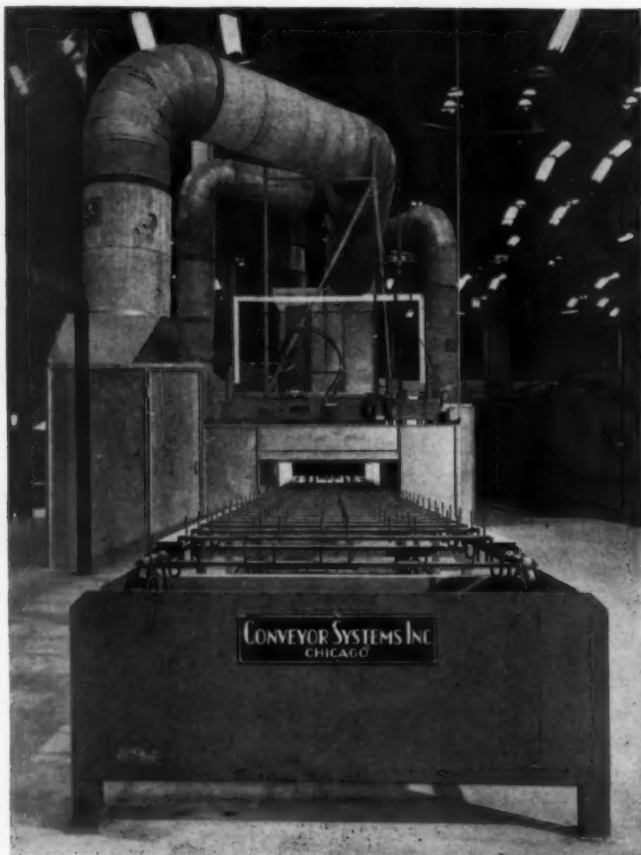
NEW YORK DETROIT LOS ANGELES ATLANTA BOSTON CLEVELAND DALLAS MILWAUKEE NASHVILLE
PHILADELPHIA PITTSBURGH ST. LOUIS SAN FRANCISCO SEATTLE WINDSOR, ONTARIO, CANADA

Write us for your free copy of our new Catalog-Data Book. Request your copy on your company letterhead.

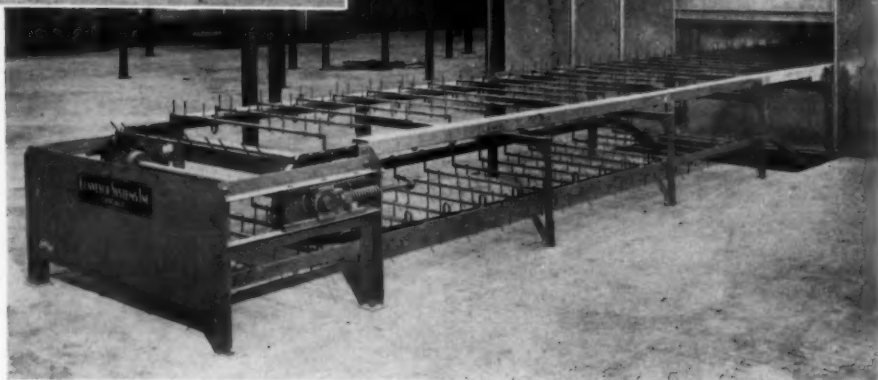
BINKS



CONVEYOR SYSTEMS



These photographs show one of the ten pin-type conveyors built for the production lines of the Lustron Plant. Pin spacing is designed to meet the ware specifications provided by Lustron engineers.



at Lustron

CONVEYOR SYSTEMS, INC., is proud to have had the opportunity to furnish the conveyors which play such an important role in the production facilities for the manufacture of the LUSTRON HOME. In addition to furnishing ten of the Pin Type Conveyors as shown in the accompanying photographs, we also supplied many Overhead Trolley Conveyors for use in connection with both ground coat and finish coat work.

We design and manufacture all types of conveyors — including cable, belt, roller, chain, and pin-type — to meet the plant and production requirements of the individual job.

Conveyor Systems, Inc.

ENGINEERS MANUFACTURERS



PHONE
NEVADA 8-1840

325 SOUTH CALIFORNIA AVE. CHICAGO 12, ILL.

HERE'S HOW...



LINDBERG VITREOUS ENAMELING FURNACES PROCESS 58,000 LBS. PER HOUR OF LUSTRON HOMES



The new factory-built Lustron Home.

Lindberg designs, fabricates, and installs a complete line of oil, gas, and electrically heated industrial furnaces for enameling, heat treating, and melting. Whether you need a small laboratory furnace, a standard production line model, or a large, specially designed and custom built installation, consult your local Lindberg representative . . . or write to Lindberg Engineering Company, 2447 West Hubbard Street, Chicago 12, Illinois.

Two large electrically heated Lindberg Vitreous Enameling Furnaces process 58,000 lbs. per hour of Vitreous Enamel on steel (with tools).

These two Lindberg Furnaces, designed as an integral part of the Lustron assembly line, process an unusually wide range of architectural shapes for the new Lustron Home. These include wall sections 8'6" x 24", roof strips 8'6" long, doors 6'10" x 38", framing of various sizes, mouldings as small as one inch in width, exterior panels and many other parts.

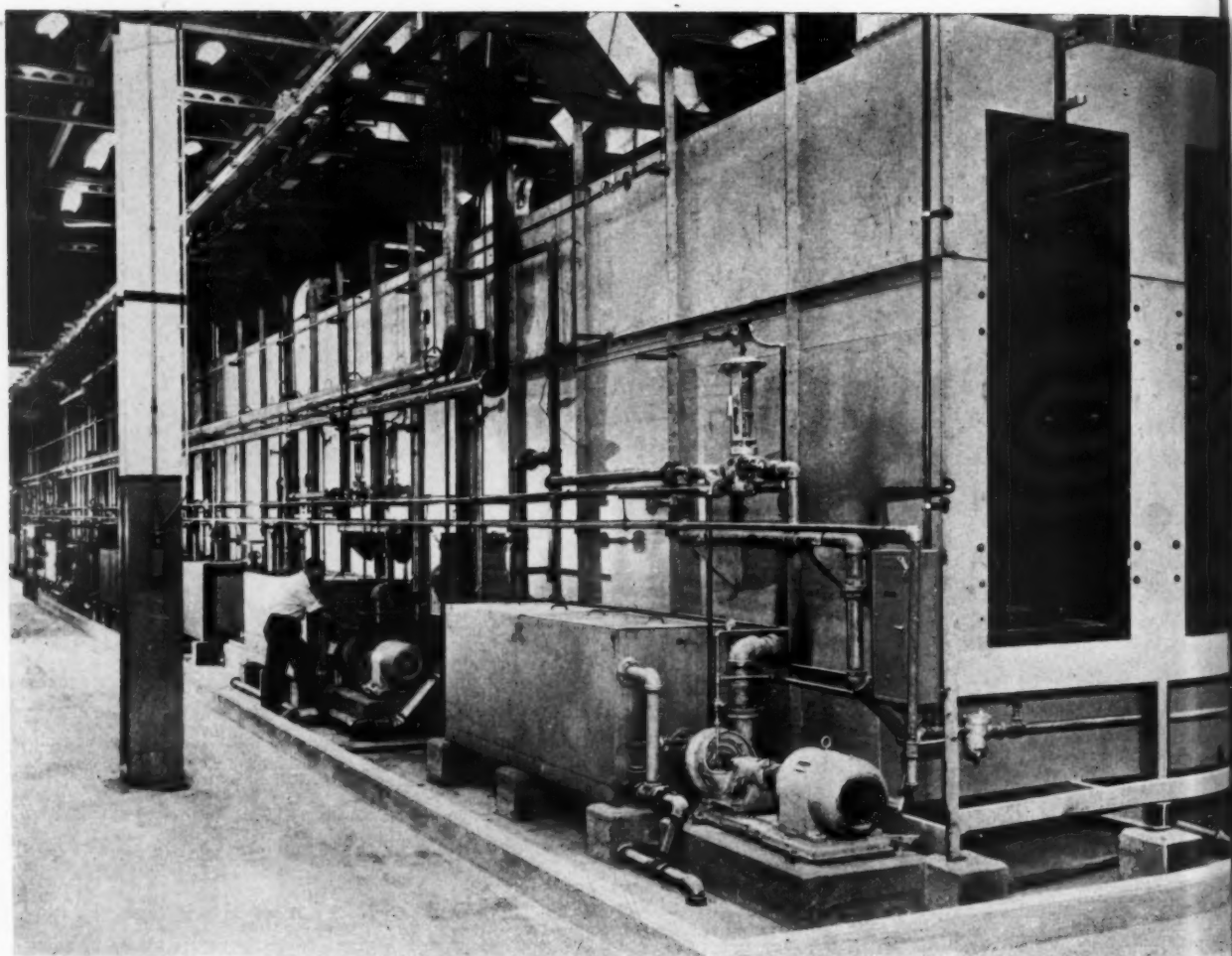
Each furnace is 180 feet long with a work chamber 11 feet high. Heating elements are grouped into 32 separately controlled temperature zones to allow accurate, flexible control of the temperature gradient. Traveling thermocouples periodically accompany the porcelain enamel work and assist the operator to establish and maintain the proper furnace burning conditions, and can, if necessary, provide a complete ware temperature record every 15 minutes. Other new design features of these furnaces are kinetic air plugs and electronic silhouettes.

LINDBERG FURNACES

HOW TO PICKLE A HOUSE

Pickling Problems in the mass production of the U.S.

METALWASH CONTINUOUS

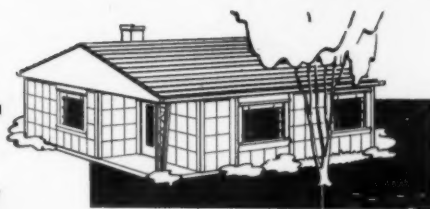


Here is one of the mammoth METALWASH Continuous Spray Pickling Machines for processing steel panels and other parts in the mass production of porcelain enameled steel houses at the Lustron Corporation plant in Columbus, Ohio. These machines, each over 180 feet in length, automatically prepare the steel parts for porcelain enameling—taking them through the cleaning and pickling cycle as shown at the right.

METALWASH is a leader in the design and manufacture of continuous spray pickling equipment. That is why METALWASH engineering skill and experience was selected to meet this challenge in mass production pickling.

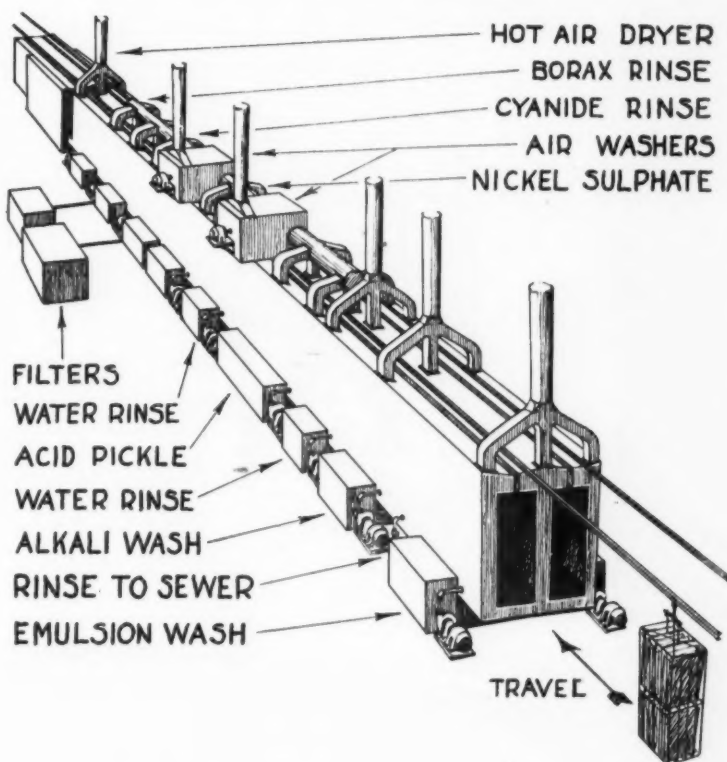


SA f th **USTRON HOME** were solved by **OU PRAY PICKLING EQUIPMENT**



7 reasons why Continuous Spray Pickling is Best

- 1** The exact cycle is automatically controlled, eliminating the human factor.
- 2** Less solution is required in each stage of the process—thus reducing the operating expense.
- 3** Rejects due to improper pickling are virtually eliminated because spray cleaning and pickling is much more efficient and thorough.
- 4** Spray rinsing is much more effective, and ware does not dry between the stages of the cycle.
- 5** A uniform deposit of nickel of thickness recommended by good practice is obtained.
- 6** Effective exhaust venting eliminates obnoxious vapors.
- 7** Fully automatic machinery eliminates handling problems and speeds up production.



Above illustrates one of the continuous spray pickling machines—showing the various stages through which the ware passes. These machines are among the largest spray picklers ever to be built.

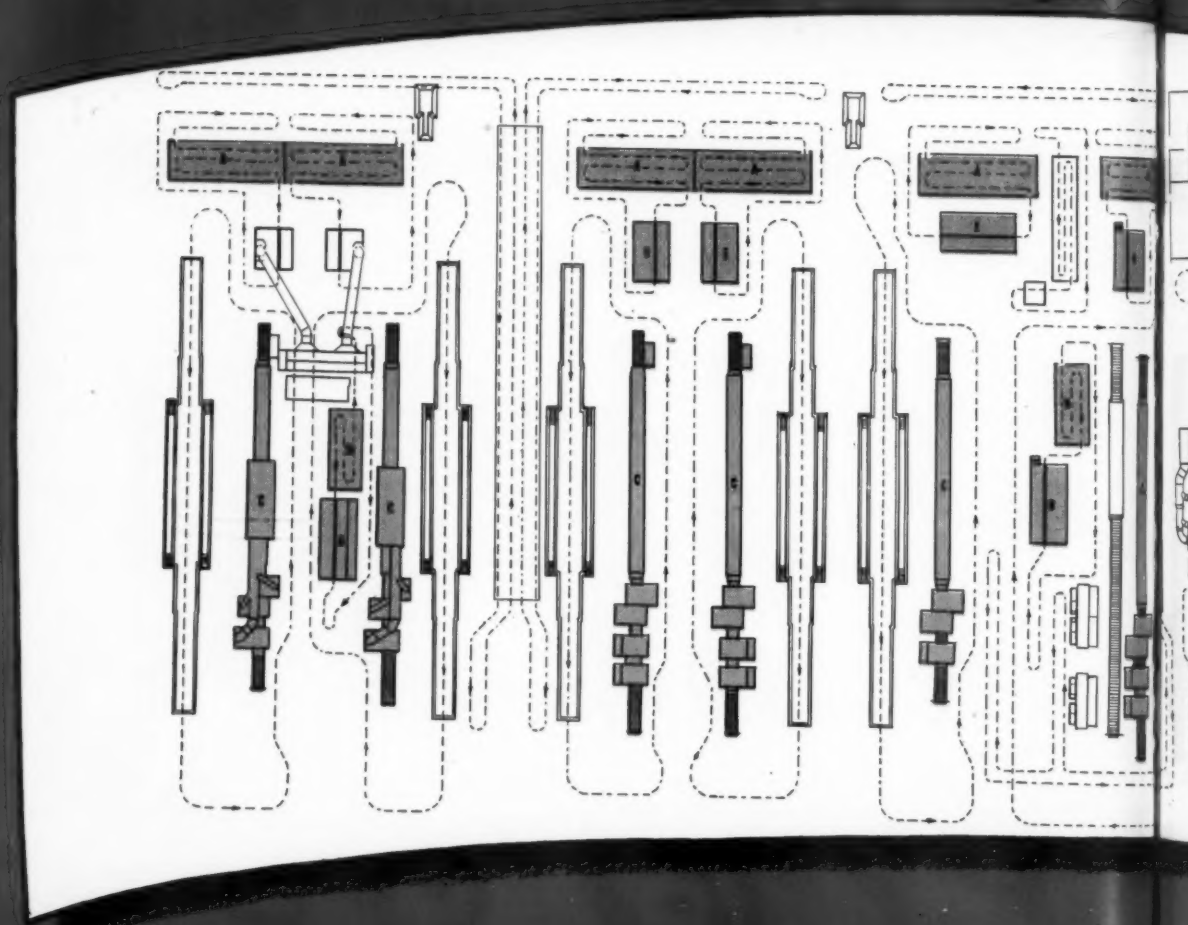
METALWASH Continuous Spray Pickling Equipment provides a clean, nicely etched surface, properly nickel coated, producing greatly improved adherence qualities and better porcelain enameling—and the machine may be placed in a convenient position, right in the "production line," since it is not necessary to confine it in a separate room.

Contact METALWASH for better pickling prior to porcelain enameling.

METALWASH MACHINERY CORP.
149 - 155 SHAW AVENUE IRVINGTON II, NEW JERSEY

"DESPATCH OVEN COMPANY was the FIRST to install in our plant and have ready for operation their half million dollars worth of equipment. To me, this superior speed is typical of their long years of experience in solving heat processing problems successfully!"

W. Strandlund



Here are the three most important reasons why DESPATCH OVEN COMPANY was the first to get Lustron's equipment installed and ready for operation.

1. Despatch has outstanding production facilities. Because DESPATCH is the largest exclusive manufacturer of heat processing ovens in the nation, the Lustron ovens only required six days fabricating time in the DESPATCH plant.

2. Despatch has had unrivalled experience. During their 46 years of experience and over 50,000 installations, DESPATCH has pioneered and developed more basic improvements and methods in heat processing equipment than any other firm in the industry. This fund of knowledge was extremely valuable in the Lustron installation.

3. Despatch is a firm of resourceful engineering specialists. Even though they had many different types of equipment to design and install at Lustron, competent DESPATCH engineers designed them all equally as well. And, cooperating with Lustron engineers, they integrated their equipment expertly with the overall production requirements.

Half Million Dollars Buys a Lot of Despatch Equipment

The Lustron installation includes:

- A. 7-Ground coat drying ovens, overhead monorail. Sizes range up to 16' x 50' x 13'.
- B. 3-Cover coat drying ovens, overhead monorail. Sizes up to 14' x 31' x 12'.



OVERHEAD
CONVEYORIZED OVENS



TUNNEL-TYPE OVENS



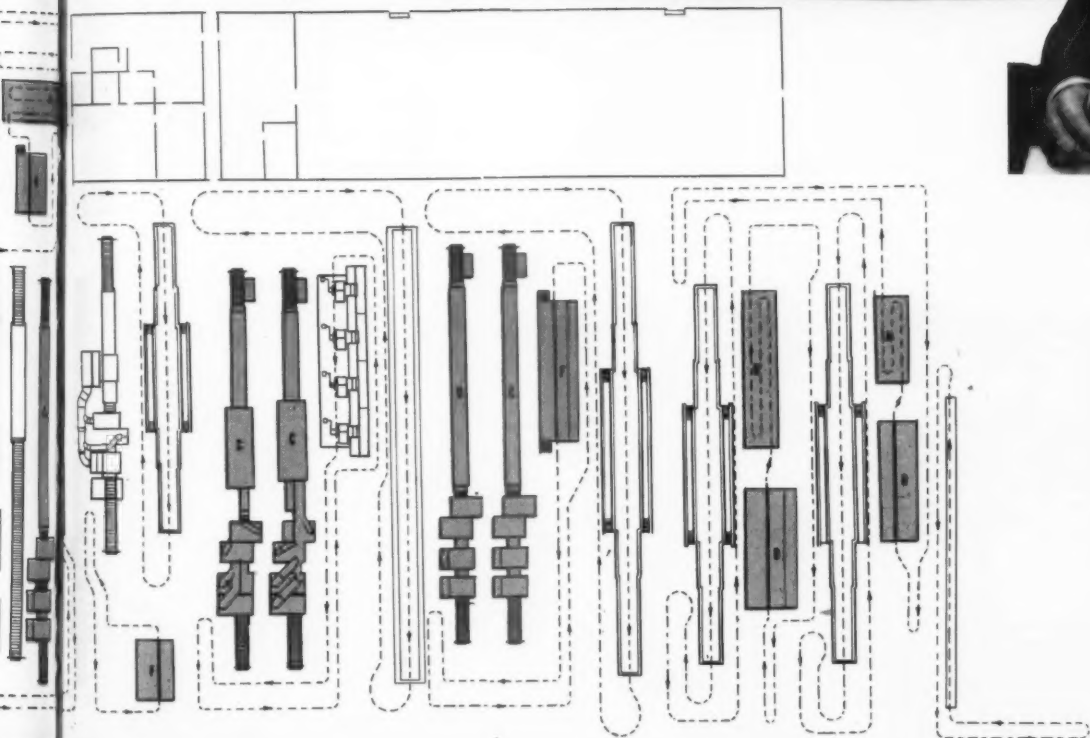
METAL TREATING
SYSTEMS



WATER-WASH
SPRAY BOOTHS

DESPATCH, first equipment
to arrive, says...

C. G. Strandlund
President, Lustron Corporation



- C. 10-Cover coat drying ovens, tunnel type; pin type conveyor; open flame burners. Size 6' x 80' x 5'.
- D. 3-Cover coat spray booths (48' wide).
- E. 4-Reinforcing spray booths.
- F. 2-Back up spray booths (56' wide).
- G. 1-Ground coat spray booth (48' wide).

Finishing System for organic finished cabinets and closets was also installed, but is not shown. It included:

- 1—Paint Baking oven, 22' x 104' x 12'.
- 1—Moisture dry-off oven, 10' x 42' x 12'.
- 1—Five stage metal treating system.
- 2—Staggered water-wash spray booths (48' wide).

This half million dollar Lustron installation proves again the ability of DESPATCH to handle expertly a big job in

record time. It illustrates the industry's confidence in DESPATCH's reputation for durable, high quality equipment.

Lustron engineers found DESPATCH a convenient source for a wide variety of finishing and enameling equipment... ranging from cover and ground coat driers and frit spray booths to a complete finishing system, including 5-stage metal preparation, spray booths and finish baking equipment.

Just as DESPATCH gave the mammoth Lustron installation fast service, expert workmanship and custom-engineered equipment, the smallest job, too, receives the same careful attention. That's why the name DESPATCH means **DEPENDABILITY** to all firms, big or small, who process porcelain or organic finishes.

See Despatch bulletin in Sweet's Mechanical Industries File (1949 Edition) and write today for finishing bulletin 51X.



BATCH-TYPE OVENS

DESPATCH
OVEN COMPANY

DIP TANKS

JERVIS B. WEBB CONVEYORS SERVE

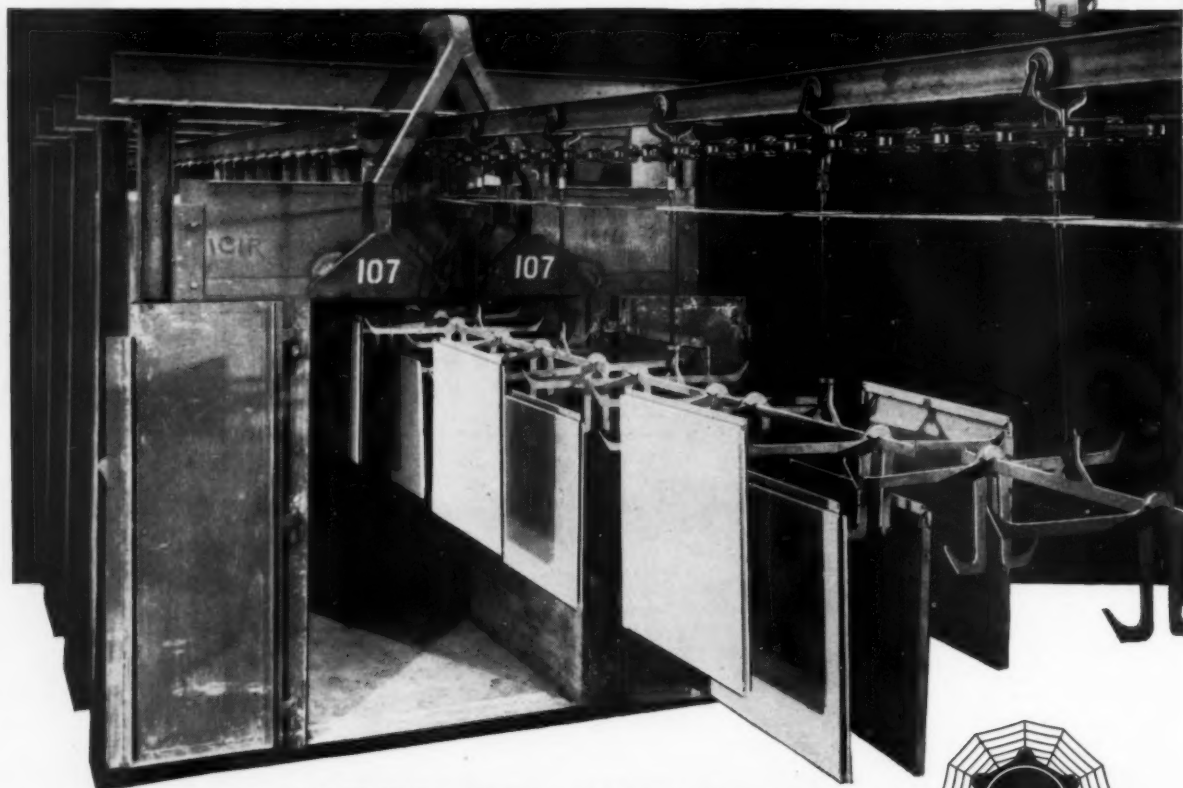
*new enameling
plant for*

SENSATIONAL *Lustron* HOUSE

The Lustron Enamel Steel Home is a sensation in the small home field. Its importance in housing has had recognition by the United States Government. Jervis B. Webb Conveyors serve the Boland Furnaces in the giant new enameling plant, built to turn out the Lustron house in quantity.

These are 4" Red Seal Trolley Conveyors with modern swaged type brackets of forged steel.

Wheels have antifriction bearings with large steel balls held in a retainer. "B" type attachments are equipped with special carriers which hold panels securely, do not damage enamel, yet are easily loaded and unloaded. Webb No. 458 forged Keystone chain, which has an ultimate strength of 48,000 pounds, transmits the power. Heat seal plates protect trolleys against heat damage; integral grease fittings provide for easy lubrication.



Jervis B. Webb Conveyors are widely used in enameling plants—we have the equipment and the experience to design them for satisfactory operation . . . long life . . . low maintenance. Write for Data on our conveyors.



QUALITY • SERVICE • DEPENDABILITY

5149

JERVIS B. WEBB COMPANY

Conveyor Engineers and Manufacturers

8951 ALPINE AVENUE • DETROIT 4, MICHIGAN

Offices in Principal Cities



Installation in the Lustron Corporation plant, Columbus, Ohio

BURNING TOOLS

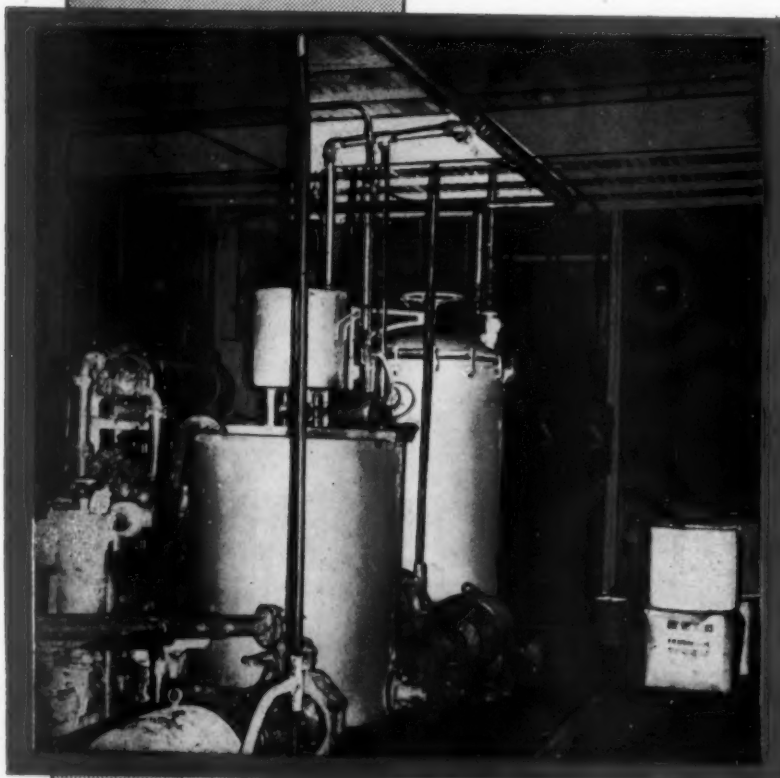
for the production of Lustron Homes were designed and
constructed in conjunction with Lustron engineering by

THE FAHRALLOY COMPANY

150th Street and Lexington Avenue • Harvey, Illinois

Quality ENAMELING AT LOWER COST!

To obtain quality porcelain enameling on a production basis requires pickling room solutions that are clean. The presence of impurities in solutions means an increase in the amount of rejects. Proper filtration is the economical way to increase your production and keep it on a quality basis. Porcelain enameling plants that operate on a large scale day in and day out, know the value of keeping their solutions free of impurities. That is why Industrial Filters are the first choice of enamellers who are quality minded.



At left — Typical installation of Industrial Filter system for enameling plants.

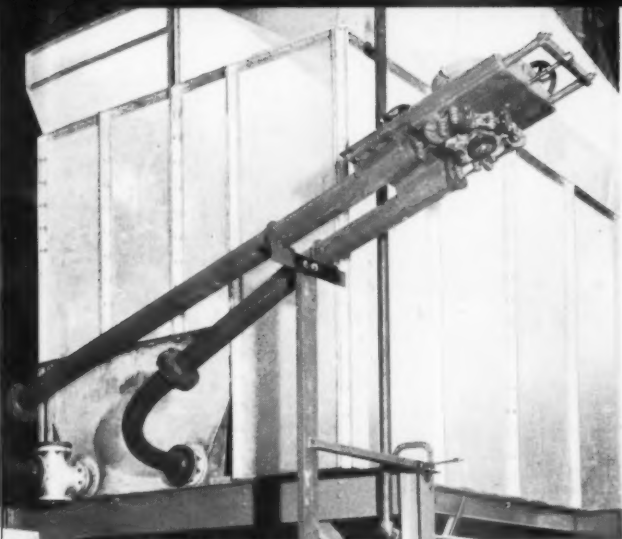
This arrangement consists of filter, pumping unit, primer-strainer unit, mixing tank, control valves, fittings and piping.

These features facilitate the convenient use of filter aids and purifying agents, making it an ideal continuous filtration system, and equally as effective for intermittent filtering. Systems are provided for all solution requirements.

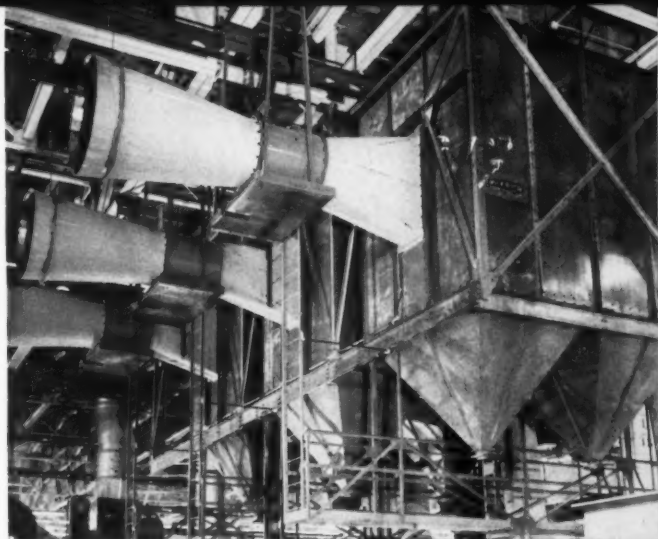
For 20 years "Industrial" has been building filters that have enjoyed an outstanding reputation for dependability, low upkeep cost, long life and bed rock operating economy. That is why so many enamellers say "I prefer the Industrial way."

INDUSTRIAL FILTER & PUMP MFG. CO.

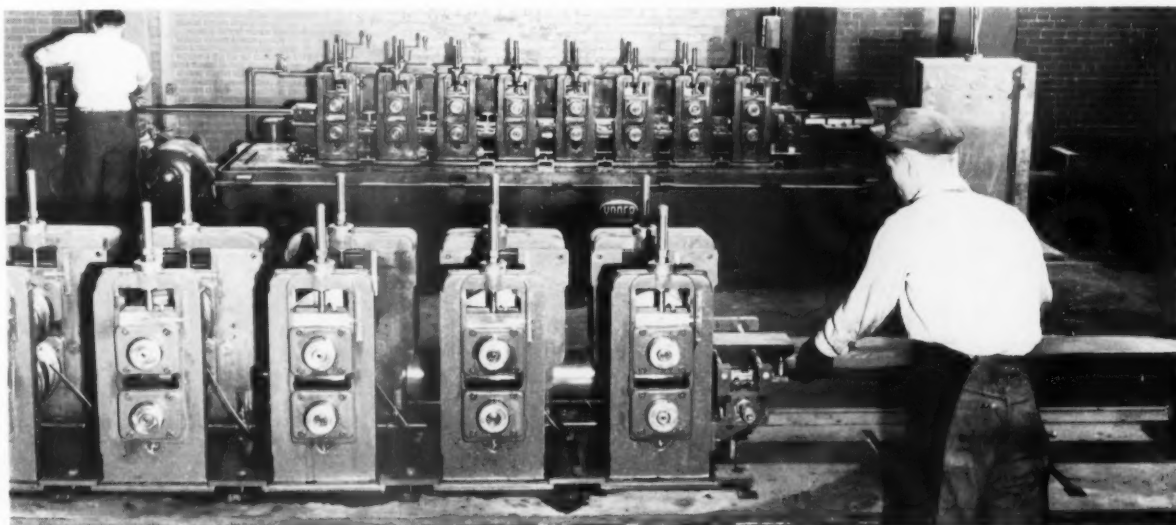
1621 39 WEST CARROLL AVENUE • CHICAGO 12, ILLINOIS • TELEPHONE SEELEY 3631 3 4 5



Installation of a sludge conveyor in the wet section of an overspray collection system. In this instance, the system serves 1 continuous machine and 2 manual booths.



Six of fifty-five dust collectors (total capacity 550,000 cfm) installed in the Lustron porcelain enameling plant for returning clean air to the 15,000,000 cubic foot room.



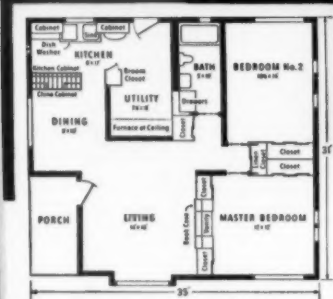
These forming rolls and others like them are used to form all structural sections. The material is fed into them from coil stock and the pieces are cut to the proper length with flying cut-off machines.

Roof truss for a Lustron Home being set in place by workmen. All structural parts are completely fabricated and given a baked protective coating before delivery to the site.



Workman fits a 2 by 8 foot porcelain enameled steel panel in the erection of the bathroom wall of a Lustron Home. Visible in the background is part of the bathroom wall.





Floor plan of the Lustron Home and a color photo of a typical bedroom.

LUSTRON FACTS

(These are answers given by Lustron to some of the "most often asked" questions concerning the new home.)

• **How much does it cost?**

If you are paying \$50 to \$60 a month rent you can afford to buy a Lustron Home. Lustron Homes are shipped "f.o.b. factory." They include plumbing, wiring, and some major utilities.

• **Who will sell Lustron Homes?**

They will be sold by authorized builder-dealers located throughout the country. No sales to individuals will be made by the factory.

• **What colors are available?**

A choice of a number of color combinations for interiors and exteriors. Wall colors are neutral to blend with furnishings and draperies selected by the owner.

• **Can I have any other floor plan?**

Not at present. The initial production will consist of the home as presently exhibited and advertised.

• **What are the built-in conveniences?**

They include recessed book shelves, china cabinet, mirrored dressing table, drawers, cabinets and closets, kitchen cabinets, and combination dishwasher-clotheswasher.

• **How do I hang pictures?**

Adhesive pads containing a hook adhere to the wall and will support any reasonable weight.

• **How long does it take to erect?**

Three days — after completing and curing the concrete slab to putting the key in the front door.

• **How about maintenance?**

No repairing, redecorating or reroofing. Cleaning and maintenance materials are soap and water.

• **Can the house be taken down and moved?**

No, it is built as a permanent home and is not demountable or portable.

• **How long will the house last?**

The permanence of porcelain enameled steel is attested by the fact that many porcelain enameled objects produced hundreds of years ago still retain their original beauty.

• **What about floors?**

Floors are of asphalt tile on concrete. The color of the tile is chosen to harmonize with the colors selected for the home.

• **What about insulation?**

The house is completely insulated with permanent fireproof insulating material on exterior panels and over ceilings.

**THINNER GAGE
SAG RESISTANCE**

ENAMELED WARE of lighter gage stock can be fabricated to desired shapes and retain a better appearance because of the increased sag resistance of Titanium iron for vitreous enameling. This particular feature is clearly demonstrated on chart at right.

Another feature is the elimination of formerly necessary ground coats. For—under proper shop conditions—the cover coat can be applied directly to the base metal. Also, these thin finishes reduce the hazards of chipping and breaking. Furthermore, at enameling heats, there is no sign of enamel boiling. During three years of both research and production experience, no case of fish scaling has been reported.

Further information is available upon request.

TITANIUM IRON FOR VITREOUS ENAMELING

EFFECT OF GAGE AND COMPOSITION ON SAGGING RESISTANCE

GAGE AND COMPOSITION	DEGREE OF SAG IN %
24 Ga. Standard Enameling Iron	100
24 Ga. Titanium Steel	57
18 Ga. Standard Enameling Iron	100
18 Ga. Titanium Steel	18

The Titanium Alloy Manufacturing Company produces the titanium alloy used in the manufacture of this steel. For samples of this steel, see your steel supplier. Pending patent appli-

cations on the new enameling process and products made thereby are owned jointly by Inland Steel Company, and The Titanium Alloy Manufacturing Company under trust agreement.

TAM

TITANIUM ALLOY MANUFACTURING COMPANY

Executive Offices: 111 Broadway, New York City General Offices and Works: Niagara Falls, N. Y.

The Washington round-up

By Wilfrid Redmond

THE freezing of industrial stocks of strategic and critical materials for stockpiling would be one of the first measures taken in the event of an international situation carrying the threat of war. It is reported in Washington that the Munitions Board is prepared to take this step.

Because of the critical supply situation of many of the 67 materials on the stockpiling list, such an action would precipitate the need for allocation procedures.

The Munitions Board is now buying strategic metals regardless of shortages for domestic use.

The fourth quarterly report by the Secretary of Commerce under the Second Decontrol Act warns Congress that the likelihood of increased stockpiling requirements for tin and antimony dictates a cautious policy in the relaxation of controls.

Antimony and tin still critical

Although current domestic demands for antimony are being met in full, the future supply of this important material is still uncertain, the report of the Secretary said. Foreign producers cannot be depended upon to make available a steady supply.

Depending upon the level at which the stockpiling program is established, it may be necessary, the report said, to impose tighter restrictions on the distribution and use of antimony than at present. It was the recommendation of the Secretary that controls over tin and antimony are still needed, despite the continuing improvement in the supply situation for both commodities.

At this time, when a state of uncertainty exists in the international situation, there is a marked lack of coordination in our policies with respect to strategic materials in spite of the watchfulness of the National Resources Security Board and the Munitions Board.

The Munitions Board, for instance, is not stockpiling ferrous scrap, or

taking part in current efforts to start the movement in volume of scrap from Germany. A preclusive buying program for German scrap should now be in operation in the opinion of many Government people. In the event of an emergency, the steel industry would be operating at 50 per cent of capacity within six weeks for lack of scrap, according to testimony of qualified authorities at hearings before the House Public Lands Committee early this year.

15,000,000 tons ferrous scrap in U.S., British zones of Germany

The Germans now estimate that they have 15,000,000 tons of ferrous scrap in the American and British zones of occupation. This would be a nice haul for the Russians in the event the Western allies were pushed out of Germany.

The quality and amount of steel which industries will get in the coming year will depend upon the quantity and type of scrap which is made available to the steel industry. A plan is now under consideration for the purchase of German scrap by a single corporation representing the scrap dealers of the U. S. The Department of Commerce is exploring the possibility of such an organization, and the Department of Justice has approved the examination of such a plan. However, it is difficult to see how the Department of Justice can approve such a program because it appears to be in violation of the anti-trust laws. The scrap dealers, nevertheless, are for it and voted preponderantly for it at a conference sponsored by the Department of Commerce.

The Secretary of Commerce has approved the allocation by the steel industry of 59,000 tons of steel for the manufacture of prefabricated steel houses. This allocation covers the period through February 28, 1949. It is reported that about 43,000 tons of the allocation would go to the Lus-

tron Corporation for the manufacture of porcelain enameled steel houses.

It now seems certain that most of the consumers of steel such as the prefabricated house industry will come in again before February 28 with repeat requests for allocations. This development is expected as the result of an interpretation of the voluntary agreements act (Public Law 395) by the Department of Justice which says that any program approved before the expiration of the Act, next February 28, may run for six months thereafter. Senator Wherry, chairman of the Senate Small Business Committee, recently announced he had received such a ruling from the Attorney-General and informed the Secretary of Commerce that he expected the Secretary to proceed on that basis.

Allocations to take increasing per cent of total steel output

The Department of Commerce has approved allocations of steel under the voluntary agreements act totalling 5,764,000 tons, or between 9 and 10 per cent of total steel product tonnage. Allocations now under consideration, and the estimate for ECA procurement, would add about 3,844,000 tons to the amount already allocated. This would bring the total amount allocated and under consideration to about 9,608,000 tons annual rate.

As the allocation program develops, with approved programs being announced more frequently, it becomes a certainty that industries which do not have a preferred status will soon reach a critical stage with respect to procurement of steel. This warning was recently given by Secretary of Commerce Sawyer but no one has taken any action about it. The Department of Commerce has set up a program committee to screen allocation requests from the standpoint of essentiality and an interdepartmental committee has been appointed to determine which shortages shall be considered first, but allocation of steel continues. One steel producer has estimated that 17 per cent of steel can be placed under voluntary allocation

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OUR TIME IS YOUR TIME

You are buying more than man hours when you place a job with the Vitreous Steel Products Co. You buy —

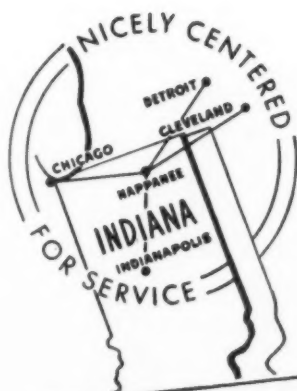
1 Twenty-six years' experience gained from forming and enameling many different parts for leading manufacturers in many different industries.

2 Superb and modern equipment from press room to shipping department.

3 A staff of skilled factory workers, many of whom have seen us grow from a little box furnace shop.

4 An art and engineering department to help create designs for low cost production and for high eye appeal.

Most important, this work goes into a shop which *must* have it. We run a job enameling plant. We make no finished products. We are out of business if we don't please our manufacturing customers.



VITREOUS STEEL PRODUCTS CO.

BOX 1791, CLEVELAND 5, OHIO (Factory at Nappanee, Ind.)

**PROTECT THOSE VALUABLE
FINISHED PRODUCTS
With the Right Box or Crate**



**PLYWOOD
WIREBOUND
HINGE CORNER
NAILED CRATES**



Consult with our packing engineers on product protection — Our designing and testing laboratory is at your service, without obligation.

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ciety to the Institute of Industrial Engineers and Engineers, the Industrial Management Society and the Society for the Advancement of Management.

NEWS

V. A. Burrows Portland Enamel Company announces the addition of Charles H. Goble to the organization. Mr. Goble (left) to industrial

Each set is exhibited under individual file in the Circular 1929, and in a permanent, hinged-to-box.

Edwards' standard for blind interlocking. In the industrial revolution new "Marshall" factory in Tennessee. Edwards' standard a complete new set 1001 long by 1101 wide. According to Edwards the new interlocking equipped with an

Shipments of automatic washers may exceed 1,000,000 units

Factory shipments by all manufacturers of automatic washing machines this year may exceed 1,000,000 units, Anthony E. Cascino, manager of market research for Bendix Home Appliances, Inc., predicted recently in an address to zone managers of Detergents, Inc., in Columbus, Ohio.

Gas range sales to new peak

Residential gas range sales reached an all-time high of 1,444,000 units during the first six months of 1948, and exceeded by 283,000 the sales during the same period in 1947, the previous peak year, according to the Gas Appliance Manufacturers Association.

Punderson firm to continue as V. B. Punderson Company

As a result of the recent untimely death of L. E. Punderson, head of L. E. Punderson Company, Cleveland manufacturers of industry cleaners, neutralizers and lubricants (see Sept. *finish*), the company name has been changed to V. B. Punderson Company, with Mrs. Vera B. Punderson as company head.

It was announced that J. W. Fraizer, former metallurgical engineer for the Crown Chemical Corp., has joined the company in the capacity of field engineer. Mr. Fraizer will handle sales and service on all LEPCO products to the porcelain enameling industry.

The report states that the company plans to continue to the fullest extent

the policies and service established by its founder, "Gene" Punderson.

Bendix appoints mfg. director



The promotion of Virgil C. Rice from director of product planning to director of manufacturing of Bendix Home Appliances, Inc., was announced by Judson S. Sayre, president. He succeeds Harry L. Spencer, who resigned to become director of manufacturing of the Norge division of Borg-Warner Corp.

Rice's industrial career began in Detroit, where he was affiliated with Briggs Body Co., Nizer Ice-Cream Cabinet Co., Kelvinator Corp., Absopure Ice-Cream Refrigeration Co., and Norge. He joined Bendix in 1943 as factory manager.

Quality control society expands

The American Society for Quality Control, formed on February 16, 1946, now includes 31 sections in

the United States and Canada with a total membership exceeding 2,200 persons, according to a report.

The purpose of the society, according to Jerome R. Steen, executive chairman of the membership committee, and director of quality control for Sylvania Electric Products, Inc., is "to create, promote and stimulate interest in the advancement and diffusion of knowledge of the science of quality control and its application to industrial processes."

Series of steel cabinet tests

With the object of keeping their quality standards for steel kitchen cabinets in line with technological developments within the industry, the Steel Kitchen Cabinet Institute is having a series of tests made of the products of ten manufacturers. The tests are being made in the engineering laboratories of Robert W. Hunt Company, Chicago, according to the Plumbing and Heating Industries Bureau.

Conlon appoints works manager

R. A. Jentsch has been appointed works manager of the Conlon Division of Conlon-Moore Corporation, according to an announcement by B. J. Hank, president. Jentsch resumed the duties he performed before the war, when he was in charge of the firm's household washer and ironer production.

During and following the war, he was works manager of Canedy-Otto Mfg. Co., Chicago manufacturer of machine tools; earlier he had served Union Special Machine Co., Chicago, in a similar capacity.

Gas industry among leaders in trade association research

The gas industry research program, now in its fourth year, ranked among the leaders in the field of trade and other associations according to a study recently released by the Trade Association Division, U. S. Department of Commerce.

Considerable attention was given to the AGA Testing Laboratories in

Cleveland and Los Angeles. This activity was rated as one of the most important in the trade association field both from the standpoint of size and scope of operations. About 120

persons comprise the research staff of the Testing Laboratories, and the buildings and equipment represent an investment of approximately \$500,000, it was stated in the report.

Merchandise Mart tour program serves 600 visitors per day

In less than five months of operation, 30,000 visitors participated in the guided tour program of The Merchandise Mart, Chicago, according to Wallace O. Ollman, general manager.

At present, eleven attractively-uniformed specially trained girls guide visitors on a 75-minute tour of the market center. When the program was launched last March 15, the staff numbered only three, but increasing visitor traffic has made necessary the expansion of the guide staff. Today, the daily average of visitors is close to 600 persons.

Guides escort visitor groups, limited to 15 persons, to eleven different homefurnishings showrooms. At the present time, 60 showrooms are being used for the tours and applications have been received from other tenants to be included in the unique promotion.

All visitors are asked to fill out cards indicating their particular interest in the homefurnishings field. The Mart management then follows through by forwarding the names of the visitors to their nearest retailer urging him to contact these prospects who have been exposed to the latest products. One retailer reported that a Detroit homemaker made a twenty-two hundred dollar purchase of home furnishings as a result of a visit to the Mart. The names are also sent to the manufacturers of merchandise in which the visitors have expressed

an interest. The manufacturers then send the tourist descriptive literature.

Chicago Technical Societies award to Wilfred Sykes



Wilfred Sykes, president of Inland Steel Company, has been elected to receive the 1948 Award of Merit by the Chicago Technical Societies Council. The award will be presented at the Merit Award meeting and banquet to be held, October 26, at the American Furniture Mart.

The Council's award is presented annually to the Chicagoland citizen "who has made the most important contributions toward cultivation of greater appreciation by the public of the part which technology, engineering, and science have played in human welfare."

Dr. Scholes resigns as dean of N.Y. College of Ceramics

Dr. Samuel R. Scholes has resigned from the position as dean of the New York State College of Ceramics at Alfred University, it was announced by school officials. John F. McMahon, present associate head of the department of ceramic research, assumed the position of acting dean of the college on September 1.

Dr. Scholes resumed his former position as head of the glass technology department, and was named associate dean, in charge of curricula and teaching.

Ing-Rich names sales representative in Chicago

Robert A. Anderson, previously with Ingersoll Steel Division of Borg-

Warner Corp., has been appointed Chicago sales representative of Ingram-Richardson Mfg. Co., Beaver Falls, Pa., and Ing-Rich Metal Products Co., East Palestine, Ohio, according to J. F. Ingram, president.

While associated with Ingersoll Steel since 1930, Anderson served in both manufacturing procurement and sales capacities, and during the war headed the procurement division for Borg-Warner's amphibian tank program. Most recently he acted as manager of contract sales for Ingersoll plants in Chicago and Kalamazoo.

ASTE semi-annual convention in Los Angeles, October 11-13

At the semi-annual convention of the American Society of Tool Engineers, October 11-13, in Los Angeles, Kenneth T. Norris, president of Norris Stamping & Manufacturing Co., will discuss "Western Industrial Problems."

"Norris is well fitted to present the picture of industry on the Coast," according to Harry E. Conrad, executive secretary of ASTE, who added "He has had years of experience as an executive and his wide participation in the activities of various businesses and industrial associations and institutes has given him an understanding of the overall situation."

Harbison-Walker appointments

J. P. Bankson, former Pittsburgh district sales manager, and H. L. Smalley, former Chicago district sales manager, have been named assistant to the vice president of Harbison-Walker Refractories Co., it was announced recently. In addition, Harold S. Dunn was appointed sales manager of the Pittsburgh district.

ASTE building new home

Construction of new quarters in Detroit, Mich., for the American Society of Tool Engineers is now under way, according to an announcement by I. F. Holland, national president of the society.

The announcement stated that the ASTE will move its headquarters

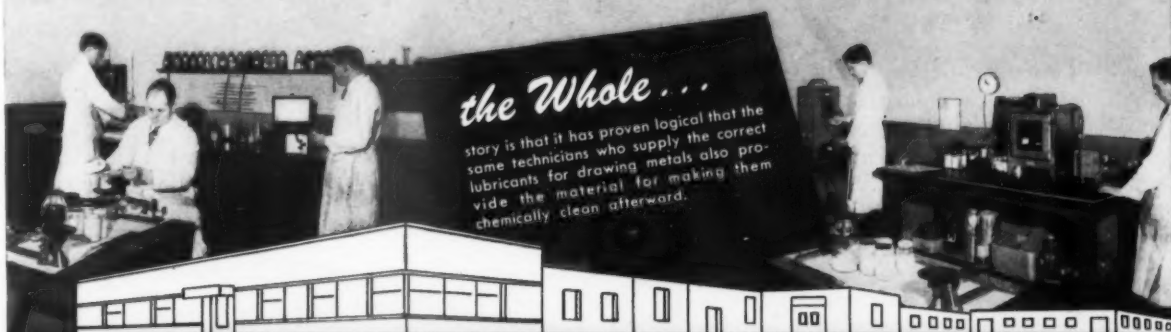
Half of this message has to do with NORTHWEST products and processes for chemically cleaning ferrous and non-ferrous metals preparatory to plating, vitreous enameling, painting, etc., each problem involving a specific programming of one or more of the thirty-five standard NORTHWEST Cleaning Compounds including Electrolytic, Immersion, Solvent, Spray, and Water Wash types . . . the "Lo-Hi" pH process of chemically cleaning metals, preparatory to plating, porcelain enameling, etc., makes practical a control that management can plan on in these departments regardless of the type of metal or soil.



the other

HALF
SUPER-DRAW

is concerned with metal forming lubricants developed for ferrous and non-ferrous metals in both pigmented and non-pigmented form . . . SUPER-DRAW products are specifically compounded for: 1. Brass and Brass Alloys, 2. Cold Rolled Steel, Enameling Iron, Stainless Steel and Aluminum, 3. Alloys of Steel, Aluminum and Copper . . . SUPERDRAW compounds will handle light, medium, and heavy operations . . . may be applied by brush, roller, spray, or dipping . . . A request on your letterhead will bring a technician to consult you on your drawing and cleaning problems . . .



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pioneers in pH cleaning control—serving you since '32

from the Penobscot Building to the new edifice by November 1.

Survey of factors affecting earnings of ceramic engineers

A comprehensive survey of the major factors which affect the earnings of ceramic engineers is reported

in an article in the August issue of *The American Ceramic Society Bulletin*. The survey was made during the past year by the Bureau of Labor Statistics, Department of Labor, at the request of the Institute of Ceramic Engineers. It is the first such study made of the ceramic field, it was stated.

Promotions at Chicago Vit

L. A. "Lew" Adams has been named assistant to the vice president, and A. S. "Al" Ault named manager, sales and service, for Chicago Vitreous Enamel Product Company, it has been announced.

Adams entered the porcelain enameling field in 1920 with Mansfield



L. A. Adams

Vitreous Enameling Company. In 1929, he was made eastern district manager for Chicago Vit, spending one year in the Mansfield area and the following two years in the Chicago office. He then moved to St. Louis, and traveled in the southern territory until February, 1947, when he was named assistant manager, sales and service, with headquarters in Chicago.

Ault, after graduation from Ohio State in 1931, worked for Frigidaire Division, General Motors Corp.; General Electric Co., and Briggs Mfg. Co., prior to joining the Chicago Vit organization in 1936. After serving as service engineer, he became eastern district manager. At the close



A. S. Ault

of the war, he became assistant manager, sales and service.

Honeywell forms merchandising department

Formation of a new department to supervise and coordinate the advertising, merchandising and sales promotion activities of Minneapolis-Honeywell Regulator Co. has been announced by C. B. Sweatt, executive vice president.

John R. Bergan has been appointed head of the new department as merchandising manager. Other changes include the promotion of Chandler Murphy as advertising manager and John A. Young as sales promotion manager. Murphy succeeds William B. Walrath who resigned to join the Chicago advertising staff of *Fortune* magazine.

Ray R. West has been named manager of sales of Minneapolis-Honeywell Regulator Company products for industrial applications, according to a report. It was stated that West, who has filled executive sales positions with Brown Instrument during his more than 20 years with the industrial division of Honeywell, will make his headquarters at the Brown plant in Philadelphia.

Tracy Mfg. announces sink and cabinet unit



A new "deluxe porcelain" sink and cabinet unit has been announced by Tracy Manufacturing Co., Pittsburgh, Pa., makers of Tracy Customized Kitchens. The addition of the new porcelain model to the Tracy line was announced by Marvin S. Bandoli, vice president in charge of sales.

In making the announcement, Bandoli said that the new product includes a 54-inch double drainboard sink top in white acid-resisting porcelain enamel, with crumb cup strainer and streamlined faucet with spray attachment. The unit is complete with a new Tracy steel undersink cabinet,

VITRO . . .



**A Complete,
Completely Modern
Color Service—**

UNDER THIS ROOF

Vitro is justifiably proud of its achievement in developing a complete and efficient color service, able to supply the many and diverse needs of the ceramic industry.

Under the roof of Vitro's central plant, about half of which is shown above, all the various operations that must be combined in the production of high quality ceramic colors proceed with the precision of good organization.

In addition to the latest in color manufacturing equipment, Vitro maintains laboratory facilities and a staff of experienced technicians, keeping Vitro always in the lead in color research and the development of better application methods.

To help you with your color problems, the Vitro staff and their wide experience are at your service.

VITRO CERAMIC COLORS
for
POTTERY • ENAMELS • GLASS



recessed center section, stainless steel handles, insulated doors and drawers, concealed ventilation, extra large storage space, and many unusual construction details.

Southwest ceramic meeting at San Antonio, October 29

The Ceramic Society of the Southwest will hold an all-day meeting and dinner session at San Antonio, Texas, on Friday, October 29, according to

an announcement by F. K. Pence, secretary.

Cowles company announces name change

At a recent meeting in Cleveland, Ohio, stockholders of The Cowles Detergent Company approved a resolution changing the firm's name to Cowles Chemical Company.

In making the announcement, Edwin Cowles, president, stated "A

change in the name of the company seemed advisable because the business of the company is becoming increasingly diversified and is no longer restricted to detergents, which are a specific class of chemicals. Since the company is largely engaged in manufacturing and selling a varied line of chemicals, it seems proper to change the name to Cowles Chemical Company."

Founded in 1885, the firm has long been active in the manufacture of industrial chemicals and detergent silicates as well as specialized detergents for the metal cleaning industries.

No change in management or ownership of the company is affected by the stockholders' action and no alteration of sales policies is anticipated, according to the report.

AGA opens campaign to promote gas range sales

Starting October 1, a comprehensive new merchandising program to promote the sales of all types of domestic gas ranges will be sponsored throughout the country by the domestic range committee of the American Gas Association. Slogan of the campaign, which was adopted in a nationwide contest, will be "Smart Cooks Know—Gas Has Got It."

Spearheading the campaign are two comprehensive portfolios replete with sales and promotional material for conducting a gas range sales campaign. Prepared by the AGA Promotion Bureau, these pieces have been distributed nationally to gas company sales and advertising executives.

Plumbing & Heating Industries Bureau annual meeting, October 21

The annual meeting of the Plumbing and Heating Industries Bureau will be held at the Palmer House, Chicago, Thursday afternoon, October 21, according to an announcement by W. W. Weaver, president, who extended an invitation to the meeting to all manufacturers interested in consumer publicity.

Reports by Bureau officers at the meeting will cover activities in such fields as newspaper and magazine

For an economical and efficient colorant

USE GRANULAR or MILLED

Orefraction Rutiles

High in Titanium Oxide content



USES . . .

- COLOR OXIDES
- BODY STAINS
- GLAZES
- ACID RESISTING ENAMELS
- WELDING ROD COATINGS
- TITANIUM ALLOYS and other uses

Orefraction's exclusive preparation, separation and beneficiation methods—plus fine petrographic, chemical and particle-size controls—assure you Rutiles which are uniformly high in quality yet economical to use in large scale production.

Orefraction Rutiles—when used in bodies, glazes, enamels and denture porcelains—give colors which range from ivory through yellows to dark tan. Their use in porcelain enamels promote acid resistance.

Our Ceramic Engineers will work with you in developing new uses or in improving quality in your present uses of Rutile.

PROMPT DELIVERY

Send for Working Samples of
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Orefraction Inc.

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Telephone: Penhurst 3200 Jack Hunt, Mgr.



Trade Mark
U.S. Pat. Office

publicity, distribution of consumer booklets, and cooperation with member associations in obtaining publicity in connection with conventions and home shows.

Training directors to meet in Cleveland

The American Society of Training Directors, a national organization embracing a membership of nearly 500 persons in 12 affiliate chapters, will hold its 5th annual conference at Hotel Carter, Cleveland, Ohio, March 3, 4 and 5, 1949.

Composed of personnel engaged in job training activities in industries throughout the country, the Society is making plans to cover all the latest developments in the training field during the three-day conference, it was stated.

Ing-Rich executive finds good fishing in Michigan



Friends of C. P. Scripture, vice president, Ingram Richardson Mfg. Co. of Indiana, report that he has found a "bass heaven" in Mesick, Mich. In the accompanying photograph, Scripture, right, and a fellow fisherman exhibit a fine mess of small mouth bass.

Third annual instrumentation seminar at Texas A & M

The third annual short course on "Instrumentation for the Process Industries" will be given by Texas

A & M College, College Station, Texas, October 26-28.

The course will be conducted as a seminar with lectures and discussions on the subject of automatic control.

Davis, Jalass named to top positions at Cribben & Sexton

Wendell C. Davis was elected president, and Harold E. Jalass, vice president of Cribben & Sexton Co., Chicago, it was announced by G. D. Wil-

kinson, chairman of the board of the Universal gas range manufacturer.

Since joining the firm in 1942 as controller, Davis has served as treasurer and vice president. He now succeeds W. M. Hillborn who resigned.

Jalass joined the company in 1917, and was named Chicago district manager in 1931. In 1946, he was appointed general sales manager, and will continue in that capacity. He is

to Page 90 →

Filter All Plating Solutions Faster, More Completely in

SPARKLER Horizontal Plate FILTERS

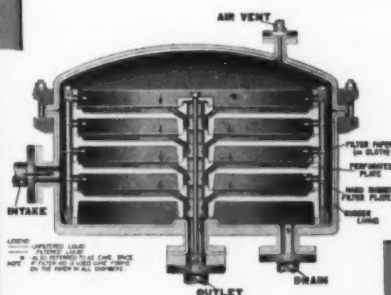
Because the filter cake is held horizontally, it is absolutely stable to the end of each filtering cycle. And cycles are longer because the cake retains its porosity longer. That is why the "horizontal principle," as embodied in Sparkler filters, gives you more efficient, low

cost, operation. Sparkler filters are pressure-tight and leak-proof, designed for intermittent or continuous operation.

4 Plating Solution Types

1. Rubber-lined for bright-nickel
2. Stainless steel for acids
3. All Iron for alkaline solutions
4. All Steel (with Stainless Pump) for chromium

SPARKLER MANUFACTURING CO. Mundelein, Illinois



Made in Capacities
60 to 10,000 G.P.H.

See your supplier or
Write for details

Our Engineering Service is available for any specialized problems.

The Conduct of a single

SAID THE OLD CHINESE PHILOSOPHER, "THE CONDUCT OF A SINGLE HOUR MAY DETERMINE THE REPUTATION OF A THOUSAND YEARS." TRUE, A THOUSAND YEARS AGO—TRUE—DOUBLY TRUE TODAY. NEVER IN OUR THIRTY-EIGHT YEARS OF PROGRESS HAVE WE EVER BEEN INCLINED TO TEMPT THE TRUTH OF THIS PROVERB. NEVER HAVE THE BARS BEEN LET DOWN TO MAKE A QUICK PROFIT! NEVER A DEVIATION FROM AN EQUAL TREATMENT FOR ALL. THE CUSTOMER AND HIS PROGRESS HAVE ALWAYS BEEN AND WILL CONTINUE TO BE OUR FIRST CONSIDERATION. IT IS THIS SINCERITY OF PURPOSE, LEAVING NOTHING TO BE IMPLIED, LEAVING NOTHING THAT IS NOT CRYSTAL CLEAR IN EVERY TRANSACTION, THAT GIVES SO MUCH PLEASURE TO DO BUSINESS WITH A COMPANY LIKE PEMCO.

PEMCO CORPORATION
Baltimore 24,  Maryland

Always Begin With a Good Finish

glour ...



→ from Page 87

a member of AGA's domestic gas range and new freedom gas kitchen

committees, GAMA's gas range committee, and vice chairman of GAMA's "CP" range committee.

Vacationing in the western states



Edward Winter, nationally known artist who has had many of his porcelain enameled murals reproduced

in *finish*, and his wife were photographed at Lake Arrowhead, California, while vacationing in the West.

Thor "Automagic" washer for dishes and clothes



A combination clothes and dish-washer, produced by Thor Corporation, Chicago, allows the housewife to

remove the porcelain enameled clothes tub and replace it with a dish drum when she wishes to do the dishes.

Southwestern Porcelain Steel to begin operations

As was announced in June *finish*, Southwestern Porcelain Steel Corporation is the name of a new jobbing plant located at Sand Springs, Okla., in "the Tulsa-Sand Springs industrial area."

Officers of the new firm are J. P. Wilhelm, president; Gordon Lasiter, vice president in charge of factory operations; John S. Lauder, vice president, sales; and Ellis C. Lasiter, secretary and treasurer.

According to Wilhelm, the plant will be in operation by the time the October issue of *finish* reaches the readers.

Porcelain Enamel Institute meetings in October

The 10th Annual Forum for plant men—October 13, 14 and 15, University of Illinois, Urbana, Illinois.

The 17th Annual Meeting and 2nd Sales & Management Conference—October 28 and 29, Stevens Hotel, Chicago, Illinois.

Binks issues new price list

An approximate 10 per cent increase in prices for its products has been announced by Binks Manufacturing Company, manufacturers of spray finishing systems. The new prices became effective on orders received by the company on or after September 15, according to E. F. Watts, vice president. The prices were announced in a recently released revised price list.

Pittsburgh ACS meeting

The Pittsburgh Section of the American Ceramic Society will hold its next meeting at Fisher Scientific Company, Pittsburgh, October 12. Following a short business meeting, the session will be addressed by John W. Whittemore, president of the American Ceramic Society.

COMPLETE *Finishing* SYSTEMS

for ENAMEL • LACQUER • PAINT



Mahon Finish Baking Oven Built Outside of the Plant Adjacent to the Building Housing the Remainder of a Complete Mahon Finishing System at the East Moline Plant of John Deere and Company. The Complete System includes a Six Stage Metal Cleaning and Rust Proofing Machine, Dry-off Oven, Hydro-Filter Spray Booths and the Finish Baking Oven Illustrated Above.

Oven Installation Outside of Plant Saves Valuable Manufacturing Space!

In order to save valuable floor space inside of the plant, and to obtain an efficient oven design unhampered by restrictions normally encountered in planning ovens inside of industrial plants, this finish baking oven, which is part of a complete Mahon Finishing System, was installed outside, adjacent to the building housing the remainder of the system. This is another example of Mahon Planning and Mahon Engineering. When you are considering new finishing equipment, remember that in a Mahon system you get better planning, better engineering, and therefore a better finish at lower cost . . . because, twenty-seven years of experience, pioneering development, and constant research, in this highly specialized field, has endowed Mahon engineers with a wealth of technical knowledge, and practical know-how not available to you elsewhere. See Mahon Insert in Sweet's Mechanical Industries File for complete information, or arrange consultation with Mahon engineers.

THE R. C. MAHON COMPANY

Home Office and Plant, Detroit 11, Mich. • Western Sales Division, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems including: Metal Cleaning Machines, Rust Proofing Machines, Dry-off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Units, and Drying and Baking Ovens. Also Paint Reclaiming Units, Hydro-Foam Dust Collectors, and many other Units of Production Equipment.



Interior of the Mahon Finish Baking Oven, Illustrated Above, Showing a John Deere Double Row Corn Picker Carried on a Continuous Overhead Trolley Conveyor.

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By "service" we do not mean, **alone**, prompt shipments . . . although that is one element that all Hommel customers prize.

By "service" we do not mean, **solely**, anticipating the needs of the industry years in advance.

Nor, by "service," do we **confine** the definition to co-operation between our Service Engineers and the Customer and our Plant Technicians and our Laboratory Specialists . . . although this team-work is highly valued by Hommel customers.

Hommel Service means ALL these things, and we invite you to benefit by it.



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- METAL POWDERS
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Our Technical Staff and Samples are available to you without obligation. Let us help you with your problems.

World's Most Complete Ceramic Supplier

Pacific Coast enamellers club first fall meeting

By *Malden Grange Bishop* • CORRESPONDENT

H EAT, gasoline shortages, and vacation periods reduced the number of Pacific Coast enamellers to 36 for the meeting at Scully's Cafe, Los Angeles, on September 10. Newly-elected President A. G. Sattler, U. S. Porcelain Enamel Co., presided while M. E. Blackburn, past president, sat at his right to give him the benefit of his experience in steering the club.

One cover coat enamels

J. Ed Hansen, Ferro Enamel Corp., publicity secretary for the Club, spoke

be one coat minded. One coat ware can only be successfully produced by the combination of better base metals, better pickling, better ground coat, better mill room practices, and better application, firing, handling, design, and furnace uses.

Close supervision of personnel is one of the most important factors. Where faulty workmanship could be covered up in two-coat ware, there is no room for errors in one coat ware. Personnel turnovers are often high and each time a new worker

square foot. The top limit is 45 grams per square foot, depending upon the ware.

The titanium enamels, still limited by the availability of raw materials, came after the war. They produce a greater opacity at lower weights of application and give acid resistance for good measure. Titaniums may be run as low as 20 to 22 grams per square foot with satisfactory opacity. However, it is extremely difficult to obtain a satisfactory spray job at these low weights. 28 to 30 grams give the best coverage.

The titaniums have had a tendency to be creamy in color. This problem is still present to some extent, but is being overcome.

The best one coat ware is a two coat job. A combination of zircons and titaniums give the best result. A coat of zircon run at 30 grams per square foot, and then a coat of titanium run at 20 grams per square foot gains the advantages of both types and overcomes most of the disadvantages of both. The two coats are dried and fired as one coat.

The qualities needed in a one coat enamel are these:

1. It must be basic opaque, with a minimum of 73% reflectance at 40 grams per square foot.
2. It must be ground fine enough to get good spraying characteristics.
3. Film strength and spraying characteristics are obtained by the use of 7%



for more than an hour on "One Cover Coat Enamels." In 1938, Hansen addressed the Canadian Ceramic Society and stated flatly that "while one cover coat ware of commercially acceptable quality could be produced, two cover coat ware would be better than one cover coat."

This statement, Hansen confessed, is no longer true. With the improvements of materials and techniques the one cover coat of today equals or surpasses the two cover coat of ten years ago.

However the production of one coat wares requires a more careful control of all factors. The running of one coat ware isn't merely a matter of the front office deciding to run one coat ware. Every worker in the plant from the president to the janitor must

Photo above: Past President M. E. Blackburn at left, and President A. G. Sattler (U. S. Porcelain Enamel Co.) at right.

Photo at right: N. W. Niece, assistant secretary (California Metal Enameling), at left, and D. L. Bohon, secretary (The DeVilbiss Company), at right.

comes into the shop the educational process must be repeated. In fact worker education is a continuous and continual job.

Zircon enamels were the pre-war standard enamels for one coat ware. Zircon may be run over the ground coat at 38, 40, and 42 grams per



clay in zircon types; 4½% to 5% clays in titanium types.

4. Anti-tearing properties are obtained by adding sodium nitrite to the slip, ⅓% to ¼%.
5. Increased film strength in handling and brushing is obtained by adding bentonite to the slip, 1/16% to ⅓%.

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New Supplies and Equipment

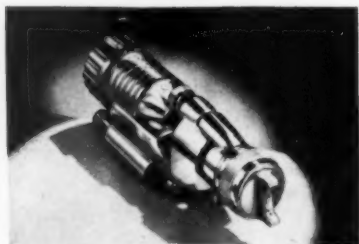
New bonding film announced

An unsupported film, which is said to provide a metal-to-metal bond resistant to shear tests up to 3,500 pounds per square inch, is 100% adhesive, with no supporting material in the film, according to the manufacturer.

The transparent "Scotch-Weld" bonding film is placed between units to be bonded and is cured by simultaneous application of heat and pressure, both varying with the type of bond desired.

Write to Minnesota Mining & Manufacturing Co., 900 Fauquier Avenue, St. Paul, Minn.

Automatic spray gun



A new automatic spray gun has been developed to meet the needs for a faster acting gun that has greater capacity and simpler controls. It is said to be adaptable to any type spray finishing machine. The gun is 7 inches long, weighs 2 $\frac{3}{4}$ pounds, and can be supplied with mounting adapters that permit tipping and turning to any positions.

For further information, request Folder IE-C104 from The DeVilbiss Company, Toledo 1, Ohio.

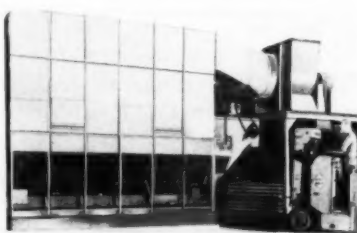
Flame spectrophotometer for analytical procedures

A new flame spectrophotometer is said to simplify both qualitative and quantitative analyses of a large number of chemical elements, and its use of a hot flame permits excitation of the spectral lines of a large number of elements, including many of the heavy metals and alkaline earth. Its wide spectral range, covering the

ultraviolet, visible and near infrared spectral regions, insures maximum range and versatility.

Contact Beckman Instruments, National Technical Laboratories, South Pasadena, Calif.

Centri-merge arrester unit



A new 30,000 C.F.M. Centri-Merge swirl type arrester is used to remove

dust and dirt from shakeout stations, sand handling and conditioning systems. Sludge disposal is by a skid on a lift truck. The conveyor drive is on top of the conveyor spout. Because of compact design, it is claimed that the unit occupies a minimum of floor space.

Contact Schmieg Industries, Inc., 364 Piquette Avenue, Detroit 2, Mich.

New unit provides quick steam

A new steam generating unit, with a 3-way fuel burner, allows industries requiring process steam to use heavy oil, light oil, or gas in its production. It is said that the "Powermaster" requires only 10 minutes or less for fuel changeover and comes to full steam pressure within 18 minutes.

Contact Orr & Sembower, Inc., Reading, Penn.

New industrial literature

Packaging literature

Snapshots of better packaging, showing many items as they are actually being packed, are featured in "The G. B. Container Album" which

illustrates several types of shipping containers.

The 12-page booklet is available from General Box Company, 500 North Dearborn Street, Chicago 10.

A new type display "catalog"



H. R. Russell, left, sales mgr., and W. M. Buttriss, adv. and sales promotion mgr., operate Tinnerman Product's sample display cabinet.

A sample display cabinet is the answer to the catalog problem of Tinnerman Products, Inc., 2038 Fulton Road, Cleveland 13, Ohio, makers of speed nuts, clips and clamps.

The company produces more than 4,000 different shapes and sizes of speed nut products, and its engineers develop new products at a rate of three a day so that the firm has found

This NEW committee will work for YOU

— to save you time and money

A new and extremely important committee (No. 8 on the list of P.E.I. committees working for its members) has just been formed. This new committee, headed by men with long experience in the design, production and handling of porcelain enameled products, has the job of answering the current problem of shipping losses to manufacturers and carriers.

You can count on it — the results of the work of this coordinating committee will mean thousands of dollars saved for each producer of a major appliance or other porcelain enameled product. You owe it to yourself and to your company to urge participation in an activity so important to individual producers and to industry as a whole.



This Emblem designed by P.E.I. identifies products finished in genuine Porcelain Enamel. It sets these products apart as having the highest quality finish and guides the purchaser in making his selection. It is offered to manufacturers using genuine Porcelain Enamel as an important part of their product finish.

If you operate a Porcelain Enameling plant or use porcelain enameled parts, P.E.I. membership will pay rich dividends to both your operating and sales departments. Write for membership information to —

1. MARKET DEVELOPMENT COMMITTEE — marketing, advertising and publicity.

2. COMMERCIAL RESEARCH COMMITTEE — market trends and opportunities.

3. PRODUCT STANDARDIZATION COMMITTEE — standards, testing and performance specifications.

4. PROCESS DEVELOPMENT COMMITTEE — new developments, equipment and processes for plant operation.

5. FORUM COMMITTEE — develops programs of importance for annual forum for plant men.

6. INSTITUTE DEVELOPMENT COMMITTEE — expanding the opportunities for greater Institute service and broadening Institute activity.

7. SALES AND MANAGEMENT CONFERENCE COMMITTEE — annual conference on selling methods and demonstration techniques.

8. PACKAGING AND SHIPPING COMMITTEE — Developing testing equipment standards for packaged products and coordinating information on the best methods for cutting shipping damage.

PORCELAIN ENAMEL INSTITUTE, INC.

1010 VERMONT AVE. N. W., WASHINGTON 5, D. C.

it impossible to maintain an up-to-the minute published catalog. Hence, George A. Tinnerman, vice president and general manager, and William M. Buttriss, advertising and sales pro-

motion manager, devised the sample display cabinet.

At least one sample cabinet will be maintained in each of Tinnerman's 13 district offices and agencies.

Catalog on sealed pin conveyors

A new 39-page catalog contains drawings of rubber flight, sealed pin conveyors for handling many materials, including reclaim enamels.

Included are engineering drawings of typical systems for dust, coal, sand, lead, iron chips, and sludge handling. Pictures and sketches of drives, vibrator, sludge tanks, trench, pneuma-

trol and sealed pin chains plus capacity charts are used to illustrate pipe conveyor adaptability and performance.

Catalog No. 4748 is available on request to Hapman Conveyors, Inc., 2408 West McNichols Road, Detroit 21, Mich.

Manual on oven selection



The first 18 pages of a new planning guide for production men presents basic data on oven application principles. The latter part of the book describes the basic oven and heater types, gives selection information, and shows how special adaptations are made for special jobs.

Copies of "How to Select the Right Oven for Your Process" are available from H. Gehrich, Gehrich & Gehrich, Inc., 3232 57th Street, Woodside, L. I., N. Y.

Data on proportioning oil and gas burners

Data on a "proportioning oil burner" for precision control of temperature and atmosphere in all heating applications is contained in Catalog 407. The manufacturer states that "better control of furnace temperature and better quality of combustion" may be had with the proportioning oil burner on porcelain enameling furnaces, including the semi-muffle type.

A supplement to the catalog contains information on "combination AC proportioning oil and gas burners" which may be used on porcelain enameling furnaces.

Catalog 407 and the supplement are available from Engineering Divi-

An Organization With 20 Years' Experience Servicing Porcelain Enameling Pickle Rooms Offers Guaranteed Results

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sion, Hauck Manufacturing Co., 124-136 Tenth Street, Brooklyn 15, N. Y.

Hydraulic ring data book

A new engineering manual contains tabulations of compound specifications, dimensional standards—and data on applications and installations, plus drawings showing typical problems of hydraulic "O" ring usage.

Copies are available from Crane Packing Company, 1800 Cuyler Avenue, Chicago 13, Ill.

New press brake die manual

Over 200 press brake dies are illustrated and described in a new 88-page die manual. Ranging from simple bending dies to complex gang punching units, related die types are grouped together with descriptive text. Also included in the manual is engineering data for making metal forming calculations and complete details and specifications on press brakes.

Copies are available without charge to persons engaged in the forming of metals. Contact Verson Allsteel Press Company, 9320 S. Kenwood Ave., Chicago 19, Ill.

Sound-slide films on quality control records

"Records that Control Quality Control" and "A Game of Chance" are combined as companion films in a 35-minute clinic presentation featuring a practical discussion on quality control records in manufacturing. These new sound-slide films give a case history on how a user of one system of record control reduced scrap rejects 23 per cent.

Write The Standard Register Company, Dayton 1, Ohio.

Catalog on permanent magnetic separators

A new 8-page 2-color catalog describes a line of permanent non-electric magnetic separators. Specifications regarding weights, sizes and strength comparisons for various types of plate magnets are given.

Write for Catalog 12, from Eriez

Manufacturing Co., 201 East 12th St., Erie, Pa.

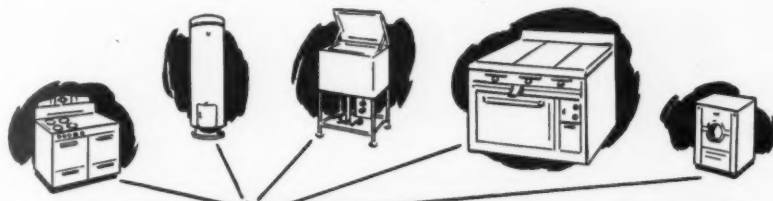
Washington round-up

(Continued from Page 78)

without disrupting normal distribution. However, small manufacturers are beginning to complain that they have been ignored in their requests for allocation programs. The small manufacturers of farm machinery complained to Senator Wherry's

Small Business Committee and the Senator called upon the Secretary of Commerce to give this group representation on the farm equipment advisory committee which voted against an allocation program.

Department of Commerce officials have reported at recent meetings with industry advisory committees that they have received assurances from members of Congress that the voluntary agreements act will be extended beyond February 28.



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| <input type="checkbox"/> For Electric Ranges, Water Heaters, Automatic Laundry Machines, Driers | <input type="checkbox"/> For Light Industrial Equipment |
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The sturdy construction and dependable service rendered by Robertshaw electric Thermostats is making many friends and influencing many sales of appliances.

Here's why. Dialing the temperature automatically turns ON the current. Their mechanical non-fatiguing, snap-action is actuated by a hydraulic element. The make-and-break action is powerful and positive, producing instant clean break of circuit.

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Double-pole, single-throw thermostats with direct or reverse action.



Combination Thermostats with selector switch and automatic cut-off of pre-heat.



Immersion and surface type water heater thermostats. Also single-pole, double-throw model used to switch current from high to low where two heating elements are used.



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 BRIDGEPORT THERMOSTAT DIVISION, BRIDGEPORT, CONNECTICUT
 AMERICAN THERMOMETER DIVISION, ST. LOUIS, MISSOURI

Youngstown open house features new blast furnace

The Youngstown Sheet and Tube Company climaxed 25 years in Chicago's Calumet district with an "open house day" on Wednesday, September

nearing completion.

Members of the press were invited to an open house preview on Monday, September 13, at which time



ber 15, at the firm's Indiana Harbor steel plant and tin mill. One of the main attractions was a new 1400 ton blast furnace (see photo) which is

Frank Purnell, president of the company, stated that nearly "every cent made has been put back into the property."



In the front row of the group photo, showing company men with members of the press, are the following Youngstown officials: Left to right, B. M. Stubblefield, manager, Chicago district properties; C. H. Longfield, vice president, sales; Frank Purnell, president; and Walter E. Watson, 1st vice president.

Pacific Coast Enamellers first fall meeting

(Continued from Page 93)

6. Poppers or jumpers are prevented by adding potassium carbonate to the slip, $\frac{1}{8}\%$ to $\frac{1}{4}\%$.
7. To counteract the excessive set qualities in the above additives, tetra-sodium pyrophosphate is added, $\frac{1}{16}\%$ to $\frac{1}{8}\%$.

The general requirements for good one coat ware are these:

1. Spray equipment must be of excellent design and in good condition to secure an even application at low weights.
2. Spray pressure must be maintained at a constant level. The amount of air pressure will depend upon spray equipment used and the working conditions and distances. However once the proper pressure is established, maintain the pressure exactly at that level.
3. Driers must not be too hot, nor too dry. Increasing the humidity in the drier will prevent "flaking" during brushing.
4. Cleanliness—which usually means pressurized spray rooms.
5. Good tooling.

One coat white direct on steel is still in the experimental stage. However the bugs are being worked out of the process, and enamellers may look forward to using it. This process requires titanium-killed steel in which carbon is less reactive. Zircon type enamels may be applied direct, or a special titanium type used. Closely controlled cleaning and pickling practice is imperative. So is good grease removal, good nickle dip, and excellent rinsing and neutralizing to remove iron salts.

Although Hansen said that he had nothing new to add to the knowledge of enamellers, he did recall that we are some times like the farmer who declined to buy the new book on scientific farming. After listening closely to the salesman pitch about what could be learned from the new book, the farmer shook his head.

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SHERWIN-WILLIAMS
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Quickly . . .

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BURDETT
(INFRA-RED)

GAS SYSTEMS

Burdett Infra-Red Gas Systems are heating cast-iron fusion kettles in the Chicago plant of the Sherwin-Williams Company. Each kettle holds 2300-2500 lbs. of solid caustics which must be melted down in the process of making Para Cresol. Four hours are required to bring a batch from room temperature up to 320° Centigrade . . . then another 12-15 hours at higher temperatures to finish the operation. Flexibility and even, well-controlled temperatures are the praise-worthy features of these Burdett Systems, famed for their accurate reliability in a host of critical processes. *

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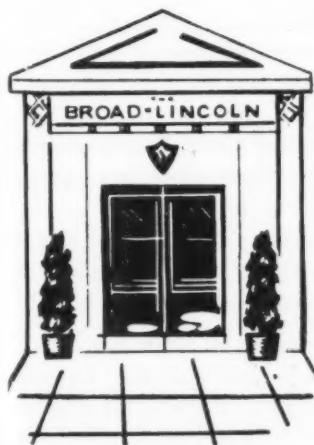


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